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A Convention Without an Exhibit Is Hardly a Convention

THE American Electric Railway Association committee has been appointed to determine whether there shall be an exhibit in conjunction with the annual convention next fall and where the convention shall be held. The exhibit was such a great success last year that presumably there will be little doubt among the committee members that it should again be a feature of this year's convention. To compare the interest and attendance at the last convention in Chicago with that at the two previous conventions serves to emphasize the great attraction which the exhibits make and the value of a central location. In 1920 the convention at Atlantic City with exhibits had an attendance of 3,300; in 1921 at the same location, but without exhibits, the convention attendance was 1,300, and then last year at Chicago, with exhibits, it was 4,200, with 3,300 passes issued in addition.

To exhibit, and exhibit well, is of course quite an expense to the manufacturers. But in what other way can the manufacturers get an equivalent opportunity to have such a large number of railway men see their products and to talk with them about their merits in so short a space of time? At the convention the railway men are away from their own pressing operating work and are in large measure free to give undivided attention to what the manufacturer has to say and show. Furthermore, the exhibit provides the opportunity to show devices and equipment to those many railway men who are not directly interested in their use, but who are an influence for or against purchasing such items (often depending on their acquaintance or lack of acquaintance with the subject) when sitting in staff counsels.

Another reason why an exhibit is desirable is that there is a great deal of development work going on again, now that the railways are in position to buy improvements, and this means that there will be many new devices and many improvements on old equipment which the convention will afford first opportunity for the operating men to see.

The general sentiment of the field is that a convention without exhibits is hardly a convention at all.

Atlantic City Is the Logical Location

THE Chicago convention last year was one of the best the association has ever held in point of interest, accomplishment and attendance. And we want to go back to Chicago again—perhaps in 1924—for its great pier, wonderful hotel facilities and central location make its advantages greater than any other city can offer. But this year it probably will meet with most general approval to go to Atlantic City again. There is no doubt that the Eastern ocean resort is a tremendously popular location for the railway conventions, and it might be a good scheme to alternate that city every other year with the locations elsewhere over the country. This year, President Emmons, being a resident of Baltimore, quite naturally favors Atlantic City, and unless it is impossible to get a fair deal with the business interests there, the 1923 convention should logically be held in Atlantic City.

Politics No Substitute for Judicial Inquiry

THE recent debate in the United States Senate over the rate of the carfares in Washington, D. C., as reported in the *Congressional Record* for Jan. 25, is a good example of the kind of inquiry into their finances under which utilities formerly suffered, but it was hoped that such a condition had long passed. The situation arose over the complaint of Senator McKellar of Tennessee that the present railway fares in the District of Columbia of 8 cents cash, with six tokens for 45 cents, gave too great a return on the investment in the railway properties, and he advocated a reduction to 5 cents. To compel the District public utility commission to enforce this rate, he urged that its appropriation, including salaries, should not be payable until it should fix rates of fare not in excess of those in the existing charters or contracts with Congress, which he said would reduce the fare to 5 cents. The debate brought out clearly that these salaries are a liability against the government in any case, and the effect of the amendment would be to try to withhold them unless the commission did certain things, which, if it is conscientious in the performance of its duties, it might find it could not do. Nevertheless, the amendment was defeated by a comparatively small margin only.

The *Congressional Record* report indicates that no evidence was presented, such as would be required in a commission hearing, as to the value of the railway properties in the District or that the proposed 5-cent fare would be suffiicent to yield an income adequate to pay a fair return on these values. On the other hand, great stress was laid upon the "burden" now borne by government clerks who go to Washington to serve the government, and are charged such "exorbitant" rates by the electric railways that they have to pay $1.50 per month more for trolley fares than if the rate was 5 cents, as it was before the war. Sympathy for these underpaid public servants on the part of the Senate is perfectly proper. Many of the salaries paid by the government are admittedly too low. But the proper place to correct this trouble is not to transfer the burden or part of it to the public utility, if it is charging only a fair price. There are many other items which enter into the cost of living and have increased far more in percentage and importance than carfare.

The action which the Senate ought to take, if it is really disturbed over the low salaries paid the government employees, is to raise the salaries. This would correct the trouble directly. The idea of correcting it indirectly by trying to cut carfares would be only a very small contribution to the government clerks, but it would reduce fares, also, to a very much larger number of people in Washington who presumably are amply able to pay them. But, when one wants to be generous, it is always easy to be so with the money of some one else, and politicians usually have this kind of generosity.

The subject has added interest just at present because of the efforts being made in some states to upset the principle of utility regulation by state commissions, which has been developed during the last fifteen years. If this movement should succeed, much of this same kind of argument in connection with utility rates will become common. There are underpaid workers in every city, and a politician can always find an excuse for asking that railway fares be reduced so that not so much will have to be paid by them for transportation. At the same time others better off financially will also pay low fares. But as Carl D. Jackson said at the last meeting of the New York Electric Railway Association, local regulation at this time, after the experience had with state control, would be a step backward and against public interest.

How Many Electric Railways Paid Stock Dividends Last Year?

THE daily papers in December contained notices of many stock dividends of 50, 100 and more per cent declared by well-known manufacturing, oil and other industrial companies. A vigorous debate has arisen in and out of Congress whether these dividends should not be heavily taxed, but to the electric railway stockholder the subject possesses only academic interest. He may read the arguments of Mr. Bedford against taxation and of some of our Senators in favor of it, but throughout the length and breadth of this land there is not an electric railway company whose stockholders as such will be affected if any such law is placed on or kept off the statute books.

If the railway stockholder should ask why he is not favored; indeed, why his company is prevented by law from declaring stock dividends, he will be told that it is because the railway is a public utility. As a utility it is not allowed to make enormous profits or to charge all the traffic will bear, like other commercial enterprises, but it must be content with a reasonable return on the investment in the property. Any greater profit would be equivalent to exploiting the public, which cannot be permitted. In return, however, and because the railway is a utility, it will be protected from unfair competition by the state, as well as permitted to earn a reasonable return on the value of its property, provided there is business to be done in the territory served.

If this condition was always followed out there might be some justice for the prohibition of high profits. But the experience of the railways proves that it is not. Otherwise, why are many of the railways in New York City in the hands of receivers, while those that are still solvent are staggering along under the burden of a 5-cent fare? Surely if these roads were permitted to charge as high a rate as the traffic would bear, they could declare 100 per cent stock dividends many times over.

All in all, the treatment of the utilities of this country by the public has been too frequently disingenuous. In the years that have passed the public nature of their work has been the excuse for limiting their gains far more often than it has served as a protection against financial disaster. These conditions are changing somewhat, due to intelligent commission rulings, but the recent recommendations of Governor Smith of New York on the subject of home rule proves that there is still much educational work to do.

Twenty Years Behind in Salaries

THE more one studies the question the more he becomes convinced that the low level of salaries is one of the fundamental ailments of the electric railway field. There seems to be a lamentable similarity between the salaries of today and those paid twenty years ago. Stories keep coming in of men who for ten, twenty and thirty years have been the faithful wheelhorses in the trying "nineteen hours a day" work of keeping the transportation machine functioning, but who have finally had to desert their lifetime work in dire need of a living wage income. The company, in such cases, usually loses a brand of loyalty and a round of experience that are difficult, if not often impossible, to replace.

Managements, of course, have been beset with the problem of making ends meet, and perhaps the conditions of the past have justified a policy of holding down hard. But is it good economy to apply this policy rigidly to the matter of salaries of the important members of the staff in all departments? Frequently, when the person of last resort, let us say the president, insists that the salary of some much appreciated employee cannot be increased $25 or $50 a month, the president is later confronted with the necessity of paying a substantial increase over that amount when he comes to replace the man, and, at that, replace him with a man inexperienced on the property. If this is good business or good economy, then experience counts for nought.

Compared with his responsibility, as measured in terms of the very large expenditures of money for which he may be responsible or the opportunity he may realize for big savings, the salary of any one important employee, in fact the combined salaries of the whole operating staff (if a change in one must be considered in the light of its effect on salaries of other staff employees) is insignificant. Viewed constructively, the answer to all this is that either the man should be fired or his ability should be rewarded in a measure commensurate with his responsibility and comparable to the present-day salary levels in other fields of endeavor.

The best of the run of men cannot be kept at poor or mediocre salaries. The best of those who remain become discontented and lose interest as they learn that there is no recognition of good work. With ambition stunted, they join forces with the poor employees and stay on, indefinitely, indifferent.

What has been said above in particular reference to major employees of course also applies to their assistants and the young men, for these salaries must all be scaled down from the boss'.

The remedy is obvious. And getting down to brass tacks, this salary situation is a direct reflection of the suspicion that many managements are still living in the past—by about twenty years.

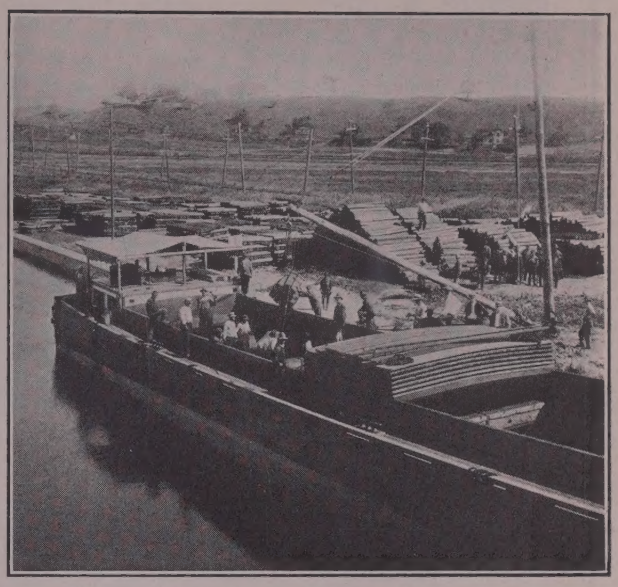
High-Speed Railroad on Erie Canal Site

The Rochester & Syracuse Railroad Builds a Cut-Off Near the Business Center of This Important Village in Central New York, Thereby Saving Considerably in Running Time — Attractive Station Is Included in the Improvement

THE Rochester & Syracuse Railroad is a high-speed interurban serving a prosperous farming and manufacturing community between the terminal cities. The company has recently acquired additional track and facilities through taking over the Empire State Railroad Corporation. The R. & S., as well as the recently acquired property, formed at one time part of the "Beebe System" which furnished a high-class interurban service in Central New York.

In seeking ways to improve the property and the service, T. C. Cherry, general manager of the company, and D. E. Crouse, chief engineer, saw at Lyons an opportunity to clip five minutes from the schedule, furnish greatly improved facilities for handling passengers and freight and reduce maintenance costs. There was a bad jog in the line at this point, due to the fact that the railway had to be brought into Canal Street, the principal business street of the village, and out again in the fashion shown on the accompanying map. The abandonment of the Erie Canal left a vacant strip of land in just the location needed by the railroad to remove this jog and at the same time keep the line within a few hundred feet of Canal Street.

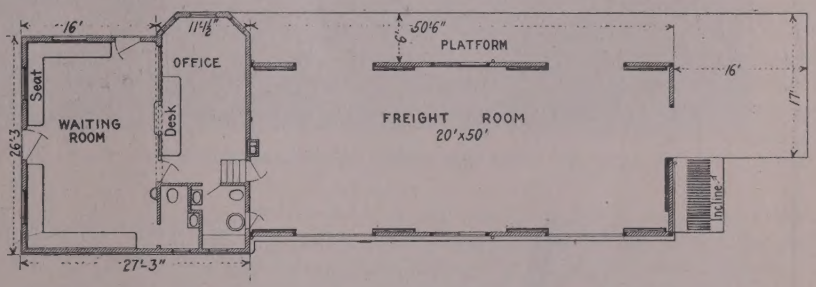
When the project was broached to the village fathers, the president and the village board gladly co-operated with the company. The necessary franchises for street crossings were granted and the services of the board were cheerfully furnished in making arrangements with abutting property owners, facilitating the moving of some structures, etc. The village purchased the entire canal strip inside the corporate limits and sold the railway what it needed for its purposes. There was no opposition from merchants on the streets vacated because the location of the station which it was proposed to build was convenient to their stores, and in a village like this business is not substantially affected by the route so long as it is fairly convenient.



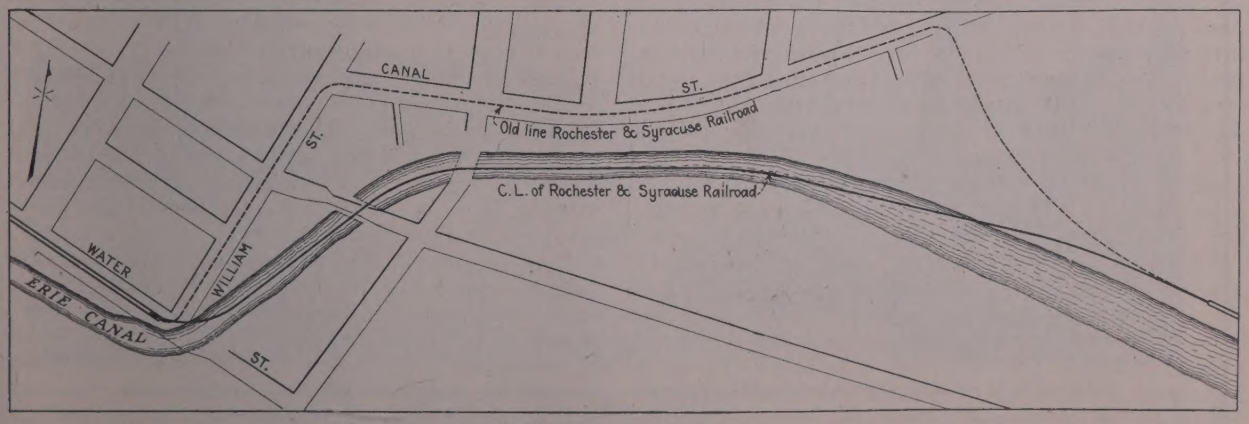
Part of These Ties Were Used on the Cut-Off

Where track was abandoned in brick-paved street the ties were left in place and the space previously occupied by the rail was brick paved. Track in macadam street was jacked out whole.

The cut-off has a length of 3,066 ft. It was built on the old tow path where possible, this being widened to accommodate double track. In other parts it was



Plan of Passenger and Freight Station, Standard for Certain Types of Station on R. & S. R.R.



New and Old Routes of the Rochester and Syracuse, Through Lyons, N. Y.

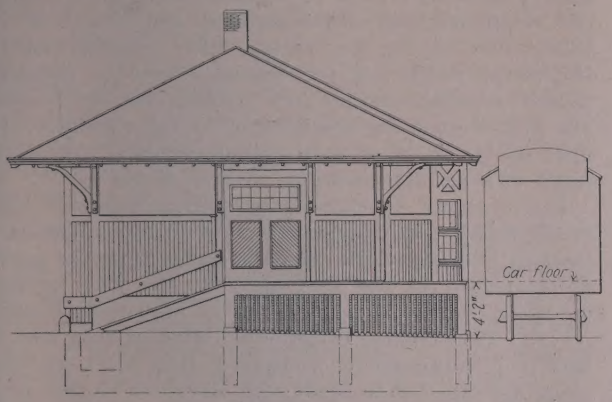
New Station on Lyons Cut-Off, Rochester & Syracuse Railroad

Filling Ballast Cars at Lyons Power Plant with Cinder for the Cut-Off Fill

Lyons Cut-Off on Site of Erie Canal, from Point near New Station. Part of Old Canal Bed Visible at Left.

necessary to make a new fill, the deepest fill, 15 ft., being between Church and Water Streets.

For the fill a total of 12,000 cu.yd. of cinder and 3,000 cu.yd. of earth was required. Fortunately for the proposition there had accumulated at the company's power house in Lyons, not far from the cut-off, an ample supply of cinder. This was hauled to the canal site in ballast cars which had been rented from the Goodwin Car Company, near Chicago, at a rental of $4 per day on a six-month contract. These cars, of which four were rented, have a capacity of 35 cu.yd. each. They



Rear Elevation of Rochester & Syracuse Standard Freight and Passenger Station, Showing Position of Freight Car

were used for general ballasting during the summer, as well as for the Lyons cut-off. These cars were supplemented by four 80,000-lb. hopper cars which the railway company purchased.

The ties used on the cut-off were part of a lot of 35,000 yellow pine ties purchased for the season's work from Eppinger & Russell, Jacksonville, Fla. They were impregnated with creosote oil to the extent of 10 lb. per tie. They were brought by steamer and barge, and the total cost delivered on the storage piles was about $1.50 each. The number required in the construction of the cut-off was 3,500.

The track was laid in part with old 90-lb. A. S. C. E. rails which the company had on hand, but the ends of these were cut off by means of an acetylene torch, and new bolt holes for the angle plates were punched. The balance of the track was laid with new 70-lb. rails.

COMPANY IS STANDARDIZING STATION CONSTRUCTION

The new freight and passenger station, which was part of the cut-off improvement, followed in design the standards which have been developed by the company. Experience has been utilized to produce a station which combines general convenience, attractiveness and low cost. Part of the drawings of the standard station are reproduced. A slight modification from the plan was necessary here in the freight section on account of the curvature of the track.

There is no cellar under the building, but the ground under the freight section is left 6 in. higher than grade to insure good drainage. Under the passenger section a 4-in. excavation is made, to be filled in with cinder as a foundation for a concrete sub-floor. The foundations are of concrete with ¼-in. to 1½-in. crushed stone aggregate, whereas the sizes for facings and concrete floor are ¼ in. to ½ in. Water table and sills are of local limestone. The concrete for foundation walls, piers and footings is one part cement, two and one-half sand and five stone, with a barrel of cement to the cubic yard.

The outside of the building is sheathed with 8-in. boards, covered with building paper and with a half-timbered roughcast finish above and ceiling below. Inside, the passenger station is finished in plain red oak, with plastering above and wainscoting below. The main floor is laid with white maple on 2-in. x 4-in. hemlock stringers.

To insure dryness in the passenger station, the floor is laid on a waterproof foundation. As already mentioned, there is a layer of tamped cinders on the ground. On this is laid a 4-in. layer of concrete with coarse aggregate and a 1-in. finishing layer. Just before the wood floor is laid two layers of two-ply roofing felt are applied to this, each having a coating of coal-tar pitch throughout. The damp-proofing is carried 6 in. up the walls.

In the freight house the floor is of 2-in. matched Georgia pine. It is carried on the side walls and a row of center columns spaced 10 ft. on centers, by means of heavy pine timbers.

The cost of construction of the passenger station was approximately $10,000 and that of the total improvement approximately $40,000.

A.-C. Locomotive Control

Review of Plans Used for Varying Voltage in European Single-Phase Locomotives, Leading Up to Account of Inductive Regulator with Brush Shift

BY DR. IVAN DÖRY
Manager Pöge Elektricitäts Gesellschaft, Chemnitz, Germany

THE speed regulation of modern alternating-current locomotives is difficult due to the great size of the motors (up to 3,000 hp.) which are employed. These have to be controlled with easy gradations of voltage and current; the control system must be capable of providing interlocks, and the operation of the motors must be sparkless. The efforts to develop a control which fulfills these requirements have led to a great variety of design.

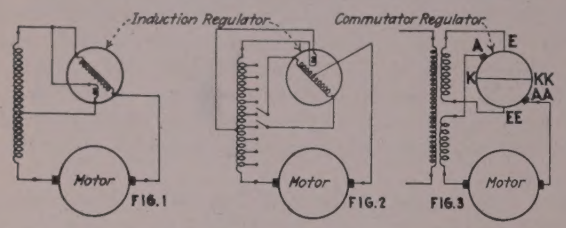
For locomotives of small capacity, the usual type of controller, which has proved so successful for the operation of direct-current street railway motors, is satisfactory, but instead of resistors for regulating the current a multi-step transformer is employed. For great capacities, however, such a controller would be unwieldy and difficult to operate; hence in large locomotives the switching of the actual operating current is removed from the controller and given over to special individual switches or contactors. The operating controller thus becomes a master controller, and the drum control is replaced by contactor control.

This arrangement permits the easy handling of large currents in many steps and the contactors can be placed in any convenient location. The master controller has to switch only a small current, it is convenient and it can be operated easily. The contactor control is, therefore, suitable for many railway requirements. It, however, lacks the interlocking feature, that is, there is no guarantee that the contactors obey the master controller, and, although many interlocking contacts are provided, a full interlocking can never be reached.

Attempts have been made to simplify contactor con-

trol by reducing the size and number of the contactors. The start in this direction was made by the development of the simple voltage divider (or voltage splitter). For example, the Siemens-Schuckert Works employed a triple voltage divider on the I-C-I express locomotives for the Prussian railroads. The Westinghouse Company, the Bergmann Works and the Swedish Almänna went even to four, six and more subdivisions of voltage.

The first use of an auxiliary transformer originated with B. G. Lamme, this arrangement requiring only half



Diagrams Showing Steps in the Development of the Induction Regulator as Applied to the Control of Voltage for Use on Single-Phase Locomotives.

Fig. 1—Induction regulator arranged for buck-and-boost connection.
Fig. 2—Induction regulator combined with step transformer.
Fig. 3—Induction regulator with commutator and arrangement for shifting brushes.

as many contactors in steps. The A. E. G. (Allgemeine Elektricitäts Gesellschaft) built the auxiliary transformer as a two-winding transformer, and the author went a step further and provided for further connections on the primary turns of the auxiliary transformer and also for regulation on the secondary winding.

The Oerlikon Works built for the C + C type Lötschberg locomotive the contactors in the form of a drum located above the transformer, operated by a remotely controlled ratchet mechanism. The advantages of a hand-operated control led Brown-Boveri & Company to the design of a straight contact row arrangement similar to a storage battery cell switch, avoiding short circuiting of adjacent contacts through the brush by splitting the latter and using a switching resistor.

Induction Regulator Found Impracticable

To avoid difficulties with arcing, Prof. R. Richter suggested the use of an induction regulator, but with the usual "buck-and-boost" connection (see Fig. 1) the required output and, therefore, the weight of the regulator render its use impracticable. He combined the regulator with a step transformer, reducing the necessary weight of the regulator. Finally, Professor Richter combined the switches in a drum coupled to the regulator in such a manner that it can be connected to the transformer only at the instant, when the position of the regulator is such that there will be zero voltage between the switch contacts (see Fig. 2). This system worked out well in service, but there are mechanical difficulties regarding the motor drive of the regulator.

The principle of brush shifting is another attractive possibility in motor control, because it gives easy gradations of control, easily controls heavy current, and is absolutely interlocked. Unfortunately, this principle of motor control is principally applicable in the repulsion motor.

For such reasons as those mentioned the induction regulator and the shifting of brushes have had to give way largely to the contactor control, but the efforts to use them brought about further improvements in large contactors. The primary consideration with regard to regulators and brush shifting seem to be: The regulator in its usual form has to have an air gap, which results in a low power factor. The regulator requires a motor drive to overcome its torque. The brush shifting method is applicable principally to the repulsion motor, whereas the series motor suffers if brush shifting is applied to it.

It is possible, however, to combine the advantages of the regulator with those of brush shifting, by equipping the regulator with a commutator and changing its voltage by shifting its brushes. The brushes may be shifted by hand, and the regulator may be designed without bearings and air gap. In this case the brushes are shifted upon the commutator of the regulator, not upon the commutator of the motor, insuring the advantages of a permanent brush position in the latter.

Fig. 4 shows an example of such a regulator with brush shifting, as built at the Pöge Works. The commutator winding of the regulator is fed from the points *E-EE* shown in the diagram Fig. 3. The variable operating voltage is taken from the adjustable brushes *A-AA*. The common commutator winding may also be used as a compensating winding, if it is short circuited along the axis *K-KK*, electrically less than 90 deg. from the axis of excitation. The regulator is connected to one-half of the low-voltage winding of the transformer, while the other half of this winding is in series with the adjustable brushes and the variable operating voltage. No switches are used.

Regulator Consists of a Stationary Transformer with Annular Iron Core

The regulator as shown is designed for a locomotive output of 1,600 hp. continuous load. It is a stationary transformer with an annular iron core. The upper surface of its winding is built like a commutator. A sturdy

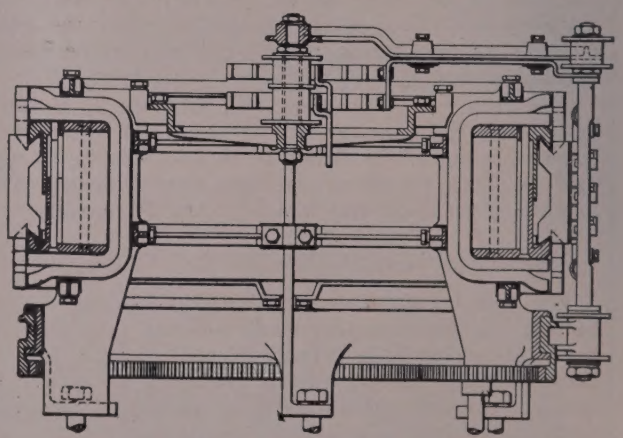


Fig. 4—Cross-Section of Induction Regulator Shown Diagrammatically in Fig. 3

iron ring, placed upon columns, supports the laminated core. The commutator is solidly connected to this core, and the winding is braced to make it short-circuit-proof. The brush apparatus is attached to the regulator column. The drawing shows the regulator standing upright. It may be altered by laying it on its side.

This method of control will soon be employed for some new German locomotives, as was stated in an article in a recent issue of the *Elektrotechnische Zeitschrift.*

Boston Transit Conditions Analyzed

Massachusetts Commission Recommends Boston Elevated Railway Extensions, Continuation of Present Fare Policy and Restrictions on Use of Automobiles in Congested Streets

ON JAN. 2 the Department of Public Utilities of Massachusetts submitted a special report to the Legislature on a number of special topics relating to local transportation facilities on which its opinion had been requested. These topics may be summarized as follows: (1) How to provide better transportation facilities between Boston and certain suburbs, particularly Chelsea, Hyde Park and Mattapan; (2) fares and financial condition of the Boston Elevated Railway; (3) co-ordination of the existing carrier facilities in the metropolitan district.

Extension of Facilities North and South

The question of the service north centers about the fact that the Eastern Massachusetts Street Railway enters Boston through Chelsea and Charleston and then over two drawbridges to Scollay Square, while part of this same territory is also served by the Boston Elevated Railway, which enters Boston through the East Boston tunnel. The latter line gives transfers to other Boston Elevated lines, whereas this is not done by the Eastern Massachusetts cars, so that there is seemingly some discrimination between the territories served. To remove this the commission recommends that the service be given by the Boston Elevated, and that about 30 miles of the Eastern Massachusetts Street Railway in Chelsea, Revere and East Boston be purchased by a political subdivision of the State to be known as the Metropolitan Transportation District, and then leased to the Boston Elevated. Somewhat the same recommendation is made for certain lines in the Hyde Park District to the south, except that in that case the city of Boston is suggested as the purchaser from the Eastern Massachusetts Street Railway, the property to be leased to the Boston Elevated, and for the purchase by the city of the Shawmut branch of the New Haven Railroad, a short spur about 5 miles in length, whose passenger business, in the opinion of the commission, could be operated to better advantage by the Boston Elevated Railway.

Economic Discussion of Boston Elevated System

As the Boston Elevated Railway is operated by public trustees, the state has a direct interest in the matter of economical service and fares. The commission points out that the investment in the system is about $141,000,000, of which $44,000,000 was supplied by Boston and Massachusetts for the construction or purchase of the subways which are leased to the company. The rest of the investment in the property was provided by private capital.

There are 9,000 employees, of which the motormen, conductors and station employees number 4,700. The basic fare is 10 cents, but there are a number of 5-cent lines, increasing in number. The following are average fares at the dates mentioned: Year ended June 30, 1921, 9.820 cents; last six months of 1921, 9.349 cents; first six months of 1922, 9.009 cents; quarter ended September, 1922, 8.883 cents; November, 1922, 8.802 cents.

The maximum wage rate for motormen and conductors increased from 30.5 cents in April, 1914, to 70 cents in the fourteen months from May 1, 1920, to July 1, 1921. During the first half of 1922 the maximum rate was 65 cents an hour. Statistics are given of other items of cost which have gone up in similar proportion. Thus coal, which cost $3.28 per gross ton at the power station wharf in 1914, went up to $10.24 in 1920. In 1921 the figure was $6.48.

TABLE I—SUMMARY OF PROPERTY ON WHICH DEPRECIATION CHARGE WAS BASED, BOSTON ELEVATED RAILWAY, DEC. 31, 1921

Description	Value of Property	Est. Life	Per Cent Yearly Dep.	Amount of Yearly Depreciation
Railway machinery and tools	$148,099.22	10	10	$14,908.92
Tunnels and subway equipment	514,447.76	25	4	20,577.91
Elevated structure and foundation	17,606,517.79	75	1⅓	234,753.56
Bridges, trestles and culverts	122,357.56	25	4	4,894.30
	1,663,122.18	75	1⅓	22,174.96
Signals and int. apparatus	858,598.14	20	5	42,929.90
Telephone and telegraph lines	36,472.76	20	5	1,923.64
Shops and carhouses	4,123,455.64	40	2½	103,086.38
Stations and miscellaneous buildings	3,543,908.55	50	2	70,878.17
Wharves and docks	39,378.95	50	2	787.58
Cars and electrical equipment	16,948,107.54	20	5	847,405.38
Shop equipment	536,870.41	20	5	26,843.52
Furniture, office appliance, station fare boxes, etc	75,621.23	20	5	3,781.06
Automobiles and trucks	237,487.65	5	20	47,497.53
Horses and road machines	492,104.33	10	10	49,210.43
Power plant buildings	5,113,335.19	40	2½	127,833.38
Substation buildings	510,579.55	40	2½	12,764.49
Power plant equipment	7,107,623.15	15	6⅔	473,841.54
Substation equipment	1,517,544.94	15	6⅔	101,169.66
Poles and fixtures	712,637.78	30	3⅓	23,754.57
Underground conduits	1,583,824.03	50	2	31,676.48
Distribution system	3,952,011.38	30	3⅓	131,733.70
Transmission system	959,964.30	30	3⅓	31,998.80
Tremont street subway-line equipment	85,487.37	30	3⅓	2,849.57
	$68,489,557.40			$2,429,176.43
Allowance to provide for track the use of which may be discontinued				75,000.00
Total yearly accrual to provide for depreciation, obsolescence and losses in respect to property sold, destroyed or abandoned				$2,504,176.40

The amounts charged off for depreciation have also been increased. For the three years previous to the acquisition of the property by the state trustees, the amounts allowed had averaged a little over $300,000 a year. Table I gives the basis used by trustees for determining the depreciation charge. In consideration of this summary and the detail tables accompanying, the trustees determined that the amount of $2,004,000 per year should be charged to depreciation. In fixing the amount for depreciation, the property excluded from consideration was that listed as obsolete, not used, or non-depreciable (like land) and that older than the estimated life. The value of this property aggregated $26,351,872. On an investment in road and equipment of $94,841,429, the company made during the year ended June 30, 1922, expenditures for maintenance of way and structures and equipment of $5,286,949, besides the allowance for depreciation of $2,004,000. Thus the total for maintenance and depreciation during this period was $7,290,949. Comparison of this depreciation allowance with that of other companies, as given in the report, is shown in Table III.

The total expenditures made by the company for improvements and charged to capital account since July 1, 1918, were as shown in Table II.

The commission then points out that if the company was required to introduce a 5-cent fare over all of its lines, the deficit, which would amount to from $10,000,000 to $12,000,000 a year, could be made up only from taxation. It adds that while low-priced local transportation admittedly is a good thing for a community, if this plan of defraying part of the cost from taxation should be followed, it would be difficult to say where it should end. It is hard to say that transportation is any more vital to the well being of a community than electricity, water and gas, or the principle might be applied to housing, fuel, food, clothing, etc. The commission does not think that the state should assume this burden and believes it to be the wiser policy for people to pay for what they get when they receive it. It is argued, it is true, that as automobile riding increases car riding will diminish and car fares will increase, and that is very unjust to those who have to ride in street cars, but the commission believes that the automobile question is a problem which should be dealt with and solved as such. The time has come, in its opinion, when the expenses which the automobiles impose on the community ought to be paid by them, and the commission is therefore all the more opposed to any suggestion which looks like burying these expenses still further in the general tax rate.

TABLE II—EXPENDITURES ON ROAD AND EQUIPMENT, BOSTON ELEVATED, JULY 1, 1918, TO SEPT 1, 1922

Elevated structures and appurtenances	$770,257.97
Surface lines	2,384,822.46
Car houses and shops	1,515,669.66
Power houses and transmission of electricity	2,297,660.01
Cars	7,583,149.14
Miscellaneous	279,702.58
Total	$14,831,261.82

Several bills presented to the Legislature last year provided that the common stock of the Boston Elevated Railway Company should be purchased by the state or one or more of its subdivisions, so as to become publicly owned. This stock aggregates $23,879,400 par value and now receives a dividend of 6 per cent per annum. All of the securities aggregate nearly $100,000,000. The various subways are publicly owned now, and this seems to be going far enough in the direction of public ownership, and the commission recommends that the present status be given a longer test.

Another suggestion is that subway rentals should be remitted for the future on the plea that the subways are nothing but underground highways and hence should be free. The remission of these rentals would amount to about $2,000,000 a year. This would benefit the car rider materially, but the commission does not recommend it, however. In the first place, it would increase the tax rate. Then, the same arguments apply also to the elevated structures, which are nothing but overhead highways. The better plan is to follow the opposite policy, i.e., to require the street railways to pay for the subways, tunnels, elevated structures, etc., and have other vehicular traffic, especially automobiles, pay a fair sum for their use of the highways. For similar reasons the commission does not approve the suggestion of remitting the corporate taxes of the Boston Elevated Railway Company.

The commission was requested also to investigate the transportation service and facilities within the metropolitan district, and whether the different means could be co-ordinated. A study was made, and a central planning body able to develop plans for the future along comprehensive lines for the relief of congestion, together with provision for the proper distribution of the cost thereof, was recommended. The commission finds that the greatly extended use of automobiles has created a serious situation which requires immediate study and prompt relief.

The motor truck, owing to free use of the roads, has been seriously injuring the steam railroads, and also greatly increasing the maintenance cost of the roads to the injury of the public. It should be made to pay properly for its use of the highways. The passenger automobile also seriously affects the receipts of the railroads and the street railways. Interurban traffic on street railways in many localities is moribund. Besides this, the automobile has become the biggest electric railway hazard and costs street railway companies large sums in safety measures and in suits.

Automobile travel also affects injuriously street railways in other ways. Thus, it was recently suggested that the Harvard Square subway entrance should be removed at a substantial cost to the railway to make this square safer for rerouting automobiles. Petitioners have asked that one-man cars in Malden be prohibited because of the congestion due to these cars and the unrestricted parking of automobiles. In Boston the street congestion is such that unless some effective restriction of traffic in the center of the city is adopted, tunnels and additional highways will have to be built for motor and other vehicular traffic, and foot travel is slow and dangerous.

The commission sees no alternative except that such tunnels and additional highways should be built or else that areas should be created in the heart of Boston from which all automobiles are excluded, except for certain business purposes or during certain hours of the day, and the latter course is the one which should be carefully considered. Such a course would probably mean congestion in traffic and parking outside this restricted area, so that the matter should be considered as a Metropolitan District matter. On this general subject the commission recommends the creation of a division of metropolitan planning of the Metropolitan District Commission, to consider among other things (1) proper compensation for the use of highways and bridges by motor vehicles; (2) the creation of areas in congested districts from which motor vehicles would be excluded wholly or partially; (3) the subjection of operators of motor trucks for hire to the jurisdiction of this department to the same extent and in the same manner as other well-recognized common carriers.

TABLE III—COMPARISON OF DEPRECIATION ALLOWANCE YEAR ENDED DEC. 31, 1921

	Depreciation	Revenue Car-Miles	Road and Equipment Expenditures	Railway Operating Revenues	Per Car-Mile, Cents	Per Cent of Investment in Road and Equipment	Per Cent of Railway Operating Revenue
Capital Traction Company, Washington, D. C.	$340,693*	9,750,116	$19,097,224	$5,501,200	3.5	1.7	6.2
Milwaukee Electric Railway & Light Company	1,162,132	22,149,606	15,030,126	9,573,885	5.2	7.7	12.1
Chicago Surface Lines	4,827,498	118,446,044	160,610,560	60,205,794	4.1	3.0	8.0
United Railways & Electric Company of Baltimore	816,600	35,708,800	78,743,000	16,332,800	2.3	1.0	4.9
Boston Elevated Railway	2,004,000	49,804,625	95,991,673	32,853,053	4.0	2.1	6.0
Public Service Railway, Newark, N. J.	1,092,664	57,496,974	.....	26,031,601	1.9	...	4.2

* On 3 per cent sinking fund basis. If on a straight line basis charge would be $470,777.99.

"By the Elevated Lines"

IN THE expansion of its publicity work the Chicago Elevated Railroads is utilizing hand-painted bulletin boards, the reproductions of which above merely indicate the subject portrayed, for a photograph cannot bring out the contrast and art of the original. The six views shown have been placed in twenty-five different locations about Chicago, principally in the outlying districts within a short radius of the elevated where people can use the service but where the structure is not in view. The purpose is to get people talking about the posters as a work of art and in so doing have them naturally form a favorable opinion of an advertiser who uses such high-class copy in appealing to the traveling public.

Collecting Five and Ten-Cent Fares

This Problem Has Been Worked Out in Several Ways in Boston, Depending Upon the Kind of Terminal Station and the Service Given—Problem Is Not a Simple One

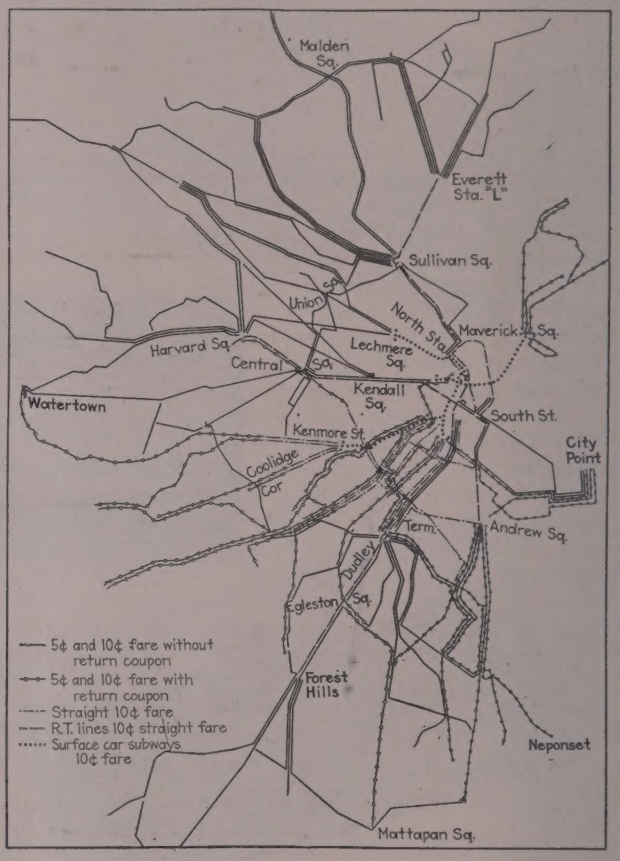
READERS of this paper generally are familiar with the principles of the Boston Elevated Railway's fare system. From July 10, 1919, up to the spring of 1921 the fare was 10 cents, but beginning with April of 1921 a system of 5-cent fares for local rides was established in the suburbs. Within Boston, however, with the exception of one or two short lines and between Boston and all of its suburbs except South Boston and Charlestown, the fare remained 10 cents.

The general arrangement of the lines of the Boston Elevated Railway facilitates the collection of these two fares reasonably well because most of the traffic entering Boston does so through the terminal stations of the rapid transit divisions of the Boston Elevated Railway at Andrew Square, Dudley Street, Harvard Square, Kendall Square, Lechmere Square, Sullivan Square and Everett Square. At each of these points passengers going to Boston from points farther out change from a surface car to a rapid transit line so that each of these points forms a logical zone limit. Moreover, at most of these points there is a prepayment area where passengers formerly, when a flat fare was charged, transferred directly between surface and rapid transit cars. With the introduction of the 5-cent fare for suburban rides, therefore, these prepayment areas proved most useful in separating the 5-cent and the 10-cent passengers. Actually the problem is not so simple as this, because all of the suburban surface cars do not run into prepayment stations where there are inclosed areas into which the passengers can unload.

At places where these prepayment areas exist, as at Everett Station, Sullivan Square Station, Harvard Station, Dudley Station, Forest Hill Station and Lechmere Station, local passengers in inbound cars pay 5 cents on leaving if they get off before they reach the prepayment station. Otherwise, they drop 10 cents in the fare box on the rapid transit platform after they leave the surface car and as they enter the rapid transit station. Local passengers on outbound surface cars pay 5 cents on entering the car.

A second condition exists where surface lines run to rapid transit terminals in the suburbs where it was not feasible to provide inclosures and collect the fares when the passengers leave the surface cars. In this case all inbound passengers pay a 10-cent fare, but if a passenger expects to leave the surface car before he reaches the prepayment station he asks for a "warrant," which entitles him when he leaves the car to a "return coupon." This is good for an outbound local fare within a period ranging from ten to forty days, so that the local fare is virtually 5 cents each way. It should be remembered that a considerable number of these local cars in the suburban areas are operated by one man.

According to the rule under which the 5-cent fare was extended to the suburban districts, the fare applies only to rides where a transfer is not used. Hence, warrants are not given except in certain specified cases



Map of Boston Showing Lines Classified as to Fare

where the local passenger offers a transfer to the conductor.

This system is used for cars running to Maverick Square, Andrew Square, Egleston Station, Broadway Station, for certain lines to Dudley Station and at a few other points.

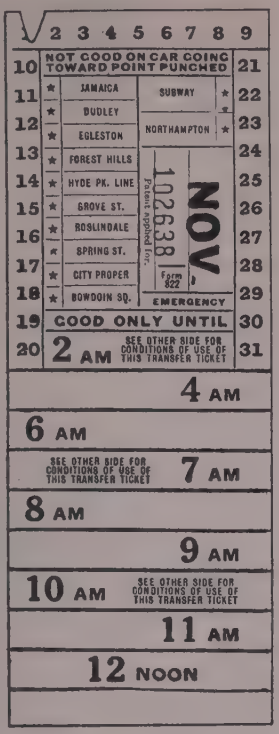
Finally, there is another situation where lines do not run to prepayment stations but where it is practicable for both kinds of fares to be paid on the cars. This applies to most of the lines running to Kendall Square and Central Square in Cambridge, the line from South Boston to Dewey Square and Rowe's Wharf, the line between South Station and North Station and one or two others. In these cases the 5-cent fare entitles the passenger to a ride as far as the car goes, whereas a 10-cent fare entitles him to a transfer to some other surface car or the rapid transit system.

Reproductions of a typical warrant and a return coupon are shown herewith.

TRANSFERS NOT PUNCHED ON TRIP

The Boston Elevated Railway has a number of forms of transfers for different conditions, but the most common form is that illustrated on page 205. This transfer was put into use on Division 2 on Nov. 1 and

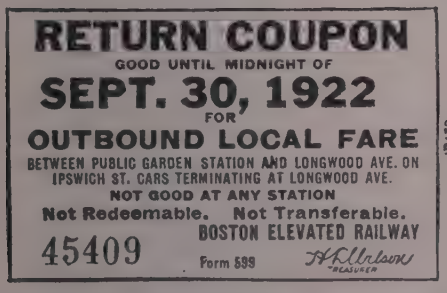
will probably be put into use on the other divisions shortly. It is a modification of the form shown in the ELECTRIC RAILWAY JOURNAL for Aug. 26, 1922. The chief feature of this transfer is, of course, the method of indicating the hour of issue by tearing off the transfer at the proper line. This enables the conductor to issue the transfer without punching the time. It has also been possible to dispense with the punch for the route on which the transfer is good by making it good on all routes except the route which would take the passenger back to his starting point, and this is indicated by a punch made by the conductor before starting on his trip. The transfers have the month printed on the face of the check, in red, and the days of the month from 1 to 31 printed around the edge. The transfer is punched for the day of the month at the carhouse before it is issued to the conductor. To facilitate the proper use of the transfer it is stapled at the bottom, so that the pad carries the stubs as well as the transfers not issued.



Present Standard Form of Boston A.M. Transfer. No Punching on Car Is Required

The company varies the colors of its transfers with the division at which they are employed so that there is less chance for their improper use. Thus on one division it will issue straw paper for a.m. and mandarin paper for p.m., and on another division lilac for a.m. and green for p.m. It also distinguishes the transfers issued by the rapid transit lines from those issued by the surface lines by printing them with red ink, while those of the surface lines are printed in black ink.

Pad No. 79
Warrant No. 20
WARRANT
Exchangeable only on this car and trip for a return coupon, if passenger leaves car at or before entering
1. Subway at Public Garden
2. Massachusetts Station
Not good for fare on any car or at any station.
Form 585
BOARD OF TRUSTEES
BOSTON ELEVATED RAILWAY
18247



The Local Suburban Passenger Receives a Warrant When He Pays His 10-Cent Fare and Exchanges This Warrant for a Return Ticket if He Leaves the Car Within the 5-Cent Limit

All transfers received from passengers are turned in at the carhouses, where they are counted by a tickometer. These machines are very rapid. The transfers are then sent to the treasurer's office.

Coin-counting machines are also used extensively in the treasurer's office, the type employed being the Sattley, which not only counts but wraps the coins. The locked fare boxes are collected every morning by auto truck, and as there are very few pennies in them these are first taken out by hand. This leaves only the nickels and dimes, and each counting and wrapping machine can count $2,500 worth and wrap them in an hour.

From the machine the wrapped coins are put in bags and the bags are checked by weighing them before they are sent to the bank. Roughly speaking, one-half of the receipts a day are received in locked fare boxes and one-half through station agents or in recording boxes.

All used transfers are canceled by a macerator which is operated by one man, who also bales the macerated tickets. Macerated tickets are then sold as waste paper for $20 a ton.

Fifteen Million People Live in Zoned Cities

MORE than 15,000,000 people live in zoned cities, towns and villages, according to information made public recently by the Division of Building and Housing of the Department of Commerce. Zoning regulations provide, by a neighborly kind of agreement, that a city or town shall be divided into districts in which the uses for which structures may be built, their maximum height and the area of the lot which they may cover are established. In line with the zoning plan, certain districts are set aside for residences, for apartment houses, for office buildings and for manufacturing.

During 1922 zoning spread especially rapidly in smaller places. Fourteen towns with five to ten thousand inhabitants were zoned during the year, bringing the total zoned towns in this class to twenty-three. Twelve places with 5,000 inhabitants or less were added to the list in 1922, bringing the total in that class to seventeen. The percentage of large cities which have already zoned remains much greater, of course, and of the fifty largest cities in the country, twenty-two have zoning ordinances in effect. New York has been zoned since 1916, and 81 per cent of the urban population of New York State lives in zoned municipalities. California ranks second among the states with 71 per cent of her urban population zoned; Minnesota, third, with 58 per cent; New Jersey, fourth, with 57 per cent; and Utah, fifth, with 55 per cent. The entire District of Columbia is zoned.

The electric railways of New York City will show a net profit for the present fiscal year, which ends June 30 next, according to a report of the statistical department of the Transit Commission. The conclusion is arrived at by analysis of the reports of the various companies for November, 1922. The result for all companies for November was a profit of $61,696, an increase of $170,170 over the same month in 1921. The winter season is proving a profitable one for the rapid transit lines of the dual system. The Interborough Rapid Transit Company earned a net profit of $58,164 and the New York Consolidated Railroad $104,248.

Association News & Discussions

New York Association Holds Midyear Meeting

Delegates Discuss the Weekly Pass, Lubrication of Railway Motors, Motor Vehicle Regulation and the Installation and Cost of Catenary Systems in a One-Day Session in New York

THE regular midyear meeting of the New York Electric Railway Association was held at the Commodore Hotel, New York, on Jan. 25, 1923. There were morning and afternoon sessions and in the evening a banquet. A short account of the meeting was published in the last issue of this paper. B. E. Tilton, president of the association and vice-president and general manager New York State Railways (Syracuse lines), presided at all three sessions.

The Weekly Pass

The first paper was that on the "Selling Principle of the Weekly Pass," by Walter Jackson, Mount Vernon, N. Y. This was printed in abstract in last week's issue.

Mr. Jackson, before presenting the paper, gave some further particulars in regard to the pass. He said that one British road had just decided to put in the pass. Up to this time, the form of pass or commutation ticket sold abroad has been for such long periods that only the wealthiest patrons could afford to buy the cheapest form of transportation. While the pass permits unlimited service, the objections which apply to the supply of unlimited service by any other municipal utility do not apply to an electric railway. With a gas or water company a man could turn on all the cocks in his house and go to the ball game. The railway pass, however, requires the time of the owner to be of value. In Chicago it has been found that a pass traveler rides about twenty-two times a week. In a city of from 50,000 to 75,000 inhabitants, the passholder would ride a larger number of times because he would go home to lunch, but there is of course a limit to its use in any city, and practically all use except two rides a day will have to be in the off-peak hours.

It is desirable to make the pass as convenient as possible for customers to buy it and use it. For this reason the usual form in which it is sold is better than if a punch card is used, as on some roads, because with the latter the customer naturally will endeavor to figure with each pass purchased whether he is ahead or behind the company at the end of the period. Moreover, punching requires the time of the conductor or operator. The speaker recommended that the number of pass riders be registered, but all companies do not do this. Where it is done, it is done on an old register or on a counter used for registering telephone calls. Such a counter can be purchased for about $3.50. Several companies check pass rides at intervals. A record of the number of the pass rides is helpful to prove to a regulating commission that the average rate given by the railway is low. Then, where a fare complaint is made, it is provable that the complainant is a cash rider and consequently not a regular rider.

In connection with his paper Mr. Jackson showed various window and other posters which had been prepared for use in Chicago and elsewhere to assist in the sale of the pass. In many cases the poster incidentally advertised the local movies, theaters, art museums, ballgrounds, etc., in explaining how a passholder could reach these resorts in the evening without additional fare. This has created a great deal of good will and had led to reciprocal courtesy on the part of these institutions or enterprises. Some of the posters prepared for the Chicago Elevated Lines were particularly attractive. (The ELECTRIC RAILWAY JOURNAL has prepared a page illustrating these posters. This page is shown elsewhere in this issue.)

Discussion on Pass

The first discussion on the pass was a letter received from Samuel W. Greenland, vice-president and general manager Indiana Service Corporation, Fort Wayne, Ind. The letter was read by Clinton E. Morgan, Brooklyn City Railroad.

Mr. Greenland's letter contains a tabulation by weeks from Jan. 1, 1921, to Jan. 14, 1923, of the city line earnings with the number of passes sold. Passes were put on sale for the first time in the week ended March 5, 1922, and up to that time nearly every week in the year had shown a decrease in gross receipts over the corresponding week in the previous year. Beginning with the second week of the pass, however, the condition changed, and only one week since that time shows a decrease over the corresponding week of the previous year. The number of passes sold have gradually been increasing from 2,967 during the first week to 6,954 in the forty-seventh week. In addition, the letter from Mr. Greenland said in part:

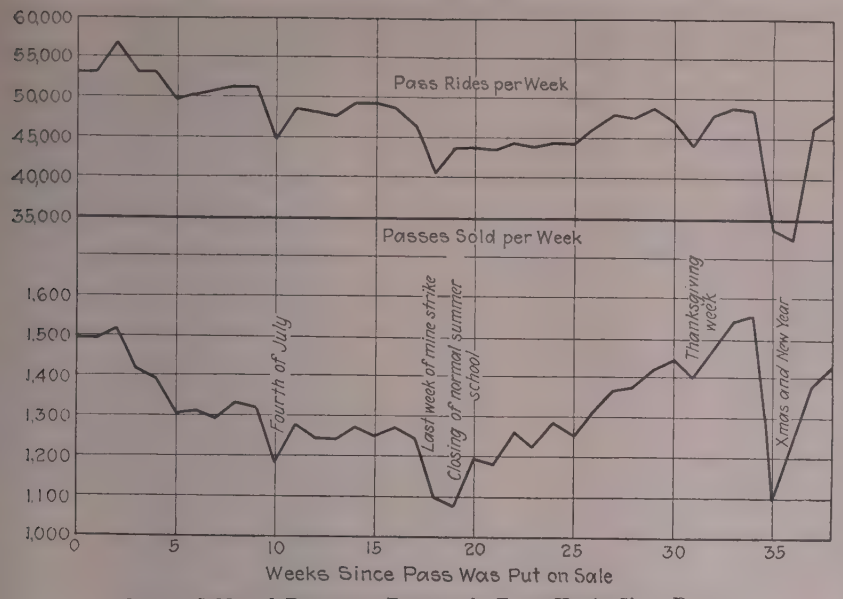
> We estimate twenty-five rides per week per passholder. This, we think, is quite conservative, and it is possible that this number should reach as high as thirty rides per week.
>
> Our present fare is now and has been since before the pass was introduced 7 cents cash, 6¾ cents for tokens, and the pass sells for $1 a week. In analyzing our revenues for the last seven weeks of 1922, we find the revenues divided as follows: Cash, 11.45 per cent; tokens, 51.29 per cent; passes, 27.26 per cent.
>
> In our opinion the pass has done more to improve our relationship situation than anything that has been done on our property, and I am very frank to say that we have not at any time had any criticism of the pass or its operation. On the contrary, we believe it has made innumerable friends for us and our service. We operate about 45 miles of track in Fort Wayne, and 100 per cent one-man cars, and are continuing to advertise the pass practically every week, using the car card method.
>
> We pave and maintain the pavement between our rails and for 1 ft. on either side, and have not at any time had any jitney competition. The operation of such competitive service, we believe, has been forestalled by the furnishing of frequent headways on all of our lines, by the use of the one-man car.

The Pass in Beaver Valley

W. H. Boyce, general manager of the Beaver Valley Traction Company, New Brighton, Pa., then told of the results obtained from the use of the weekly pass on his lines. He said they have a zone system of fare collection with a 5-cent fare for each zone. They began using the pass in February, 1922, and the revenue increased from the start. While it is somewhat difficult to say just how much of the increase is due solely to the pass, their investigation showed that for the first five months fully 70 per cent of the increased revenue was due to the sale of the pass. Passes were sold for use in one, two or three zones. As 96 per cent of the revenue came from rides of three zones or less, the three-zone pass after eight weeks was changed to one good in all zones. When a holiday occurs, the sales for that week drop off from 35 per cent to 40 per cent.

Mr. Boyce described the manner in which the school pass was introduced on his system. They charge 75 cents per week for a universal school pass good between the hours of 8 a.m. to 4:45 p.m. and the revenue from these passes now amounts to $235 per week. An advertisement for the Gas & Electric Shop is run on the backs of passes, which reduces the cost of printing. The various merchants are enthusiastic over the use of the pass and put on special sales and co-operate with the railway. The railway company spent about $300 in advertising the pass at the start but has not spent any since. Relations with the public have been made much better through the use of the pass. The railway is getting more money and putting more riders on the cars during periods of least riding.

The next speaker was E. M. Walker, general manager Terre Haute Traction



Passes Sold and Passenger Revenue in Terre Haute Since Pass Was Put on Sale (May 1, 1922)

& Light Company, who said that electric railway business conditions had changed greatly in the last ten years. Formerly, city transportation business was largely a monopoly. Now, it is highly competitive because of the private automobiles and sometimes because of jitneys. The pass is a very good means of combating both of these means of transportation and has so proved in Terre Haute. The price in Terre Haute was set at $1 a week, or equivalent to twenty rides, and the company sells about 1,500 passes a week. Mr. Walker showed a chart of the number of passes sold by weeks, pointing out that in a week with a holiday, such as Christmas, the sale of the pass drops off 30 per cent. Although other lines of business in Terre Haute had felt the effect of the coal strike, the gross earnings of the railway company have shown very little variation.

In reply to a question, Mr. Jackson gave it as his off-hand opinion that the saturation point for number of passes in a city was about 15 per cent of the total population.

Motor Lubrication

The next paper presented was "Lubricating Railway Motors," by L. M. Clark, published in abstract on page 175 of the issue of this paper for last week.

The principal discussion of Mr. Clark's paper was presented by L. J. Davis, mechanical and electrical engineer for the Brooklyn City Railroad, who said that the mechanical department of every electric railway is handicapped, in its efforts to lubricate railway motors, in a number of ways, some of which are not generally recognized. To begin with, the suppliers of lubricating oils and greases have for many years so diligently pursued the elusive oiling contract, which is generally based on the first cost of the lubricant and not on the maintenance cost of the parts lubricated or other details affected by these parts, that a magnified importance is given to the first cost of lubricant on many properties. The periodic oil report on its special form has a psychological effect on many managers which is entirely out of proportion with its real importance.

It is admittedly more difficult to analyze such items as bearing costs, gear and pinion costs, motor failures and delays to service, in their relation to the reduction in cost of lubricants than it is to accept such reductions as a mark of business acumen in the purchasing department, or managerial ability.

Suppliers of waste urge the purchase of a product whose advertised virtues are of such number as to be comparable with the latitude allowed the assembler in the selection of its constituent parts. These range from yarn made of wool to the fibrous covering of the cocoanut. These combinations of materials, whose sole virtue frequently is low first cost, are sometimes purchased and must be used.

The motor designer in his efforts to produce a lighter and lower priced product often finds that he can do so if the bearings are reduced in certain dimensions, if the armature speeds are increased, if a cheaper babbitt is used, or accessibility of lubricating details is sacrificed. The first cost is reduced but at the expense of lower lubricating efficiency and increased maintenance costs.

The truck designer, under instructions to produce a lighter and smaller truck, is sometimes forced to reduce the space allotted to the motor. This results in making the oil openings of the motor less accessible to the oiler. The car body designer endeavors to provide a low-floor car, but in doing so reduces the space between the motors and car flooring to such an extent that motor oiling on some cars has become most difficult.

These, Mr. Davis said, are some of the handicaps to successful motor lubrication. Some are the result of a misconception of efficient operation, some are due to lack of judgment as to what constitutes real economical purchasing, some to forced buying of the lowest priced product on account of financial conditions, others to the trend toward faster operation of cars and the necessity for lowered power costs.

A study of the lubrication problem on the surface cars on a large property showed that there was a considerable amount of trouble with babbitted bearings. This trouble was in a great measure due to the peening and breaking of the babbitt caused by the pounding incident to cars passing over much special work and some bad joints. It was decided to change to solid bronze bearings with no babbitt and untinned. This change is being made with satisfactory results. Reduction in the frequency of oiling of some of the older type motors was another matter which it was decided was highly desirable. It is felt that with the elimination of babbitted bearings and the installation of a new oiling device a number of the handicaps to the satisfactory lubrication of the motors on this property will be removed, thus giving better performance.

At the conclusion of Mr. Davis' discussion, C. E. Morgan of the Brooklyn City Railroad requested that Mr. Clark explain the details and theory of the vacuum oiling device which the Railway Improvement Company is marketing. Mr. Clark explained this by use of a lantern slide. A description of this device was published in the ELECTRIC RAILWAY JOURNAL for Oct. 29, 1921, page 781.

Motor Vehicle Regulation

The next paper read was one on "Fundamental Principles of State Motor Vehicle Common Carrier Regulation," presented by D. C. Fenner, chairman Motor Vehicle Conference Committee of the National Automobile Chamber of Commerce. An abstract of this paper appears elsewhere in this issue.

In calling for a discussion on this paper, Chairman Tilton said that in his opinion the automotive vehicle is here to stay, and those interested in it and electric railways should work together in connection with legislative problems.

In the discussion Walter Jackson questioned the practicability of having the fees from automobiles devoted to special highway purposes. He thought that these in time would go into the general treasury of the state.

Mr. Fenner said he thought that the highways should be constructed by the general public but the maintenance should come from the motor vehicles.

H. W. Blake thought that the tendency was toward a greater regulation of automotive common carriers and that such regulation was desirable for both public and carriers. Free com-

petition is sometimes advocated as a means of securing fair rates, but that was tried originally with the railroads and later with the electric railways and had given place to regulation and exclusive franchises, which had proved more desirable.

The final paper at the technical sessions was on insulation of catenary and other power and railway systems and was presented by Arthur O. Austin, chief engineer Ohio Insulator Company. It was illustrated by lantern slides. There was no discussion. At the conclusion of the presentation of this paper the meeting adjourned.

Regulation of Motor Vehicle Common Carrier*

Twenty-two States Now Provide for Control of Motor Vehicle Common Carriers—Position on this Matter of Motor Vehicle Conference Committee

By D. C. FENNER
Chairman Motor Vehicle Conference Committee
of the National Automobile Chamber of Commerce

DURING the course of the present year the legislatures of forty-three states will meet in regular session. If 1921, when a similar condition existed, is any criterion, there will be introduced and considered by the lawmakers of these states fully 2,500 bills directly or indirectly affecting the production, sale and use of motor vehicles.

Unquestionably many of these measures will deal with the problem of governmental regulation of the motor vehicle when used as a common carrier.

What is meant by the expression motor vehicle common carrier?

Motor vehicles are subjected to two general but distinct uses: First, they are privately employed by their owners for the transportation of persons or property. Second, for the transportation for hire of the persons or property of others than their owners.

Until a few years ago the legislatures of our forty-eight states in no way differentiated between these various uses of the motor vehicle in the laws which they enacted dealing with operating requirements, registration fees and the many other subjects which are usually found in a state's motor vehicle laws. In 1914, however, Pennsylvania definitely segregated motor vehicles when used as common carriers and placed them under the regulation of the State's public service commission. Today the laws of twenty-two states provide for a greater or less degree of such state control. Without exception state regulation of motor vehicle common carriers has been vested by law in pre-existing state agencies that exercise control over other forms of common carriers such as railroads, trolleys, telephone and telegraph lines, pipe lines, etc.

A few states deal with the subject merely from the standpoint of local control, the incorporated municipalities being given power by the state legislature to require motor vehicle common carriers to obtain permission and a license for operating from the local governing body. This is the case in Massachusetts, where the Board of Selectmen of the City Council exercises control over motor vehicle common carriers transporting passengers.

With very few exceptions the powers wielded by the public service commissions or similar forms of state agencies over common carrier transportation by motor vehicles are extremely numerous and broad. These powers are as follows:

1. Grant, refuse to grant, amend or revoke certificates of public convenience and necessity.
2. Prescribe routes.
3. Fix schedules.
4. Determine character of service and promote the comfort and safety of traveling public.
5. Establish fares and rates.
6. Require reports and uniform methods of accounting.
7. Examine accounts and records.
8. Supervise fiscal affairs such as incorporation, capitalization of stock, etc.
9. Compel additions to, extensions of, or betterments in physical equipment.

It is apparent that these powers are practically unlimited and of such a nature that the state agency has almost absolute control over the life or death of motor transportation within its jurisdiction. Nevertheless, all of the rulings of the various commissions are subject to review by the proper courts.

In a few states, as New Hampshire, it is only necessary for the operator to obtain a permit from the state authority. This is the rare exception, however. In nearly every other state a certificate of public convenience and necessity is required, while in Colorado, New York and Wisconsin a permit from the governing bodies of the municipalities in which the common carriers seek to operate must also be secured.

ARGUMENTS PRO AND CON

Those who contend for state regulation say that such control is necessary:

1. Because motor transportation for hire is a public utility and as such should be regulated along with other public vehicles so that travelers and shippers by such means can be made sure of safe, prompt, regular, adequate, efficient and economical service.

2. So that, in all cases where motor vehicle common carriers come or are likely to come, in ruinous competition with other common carriers, the state can step in and determine whether public convenience and necessity require such competition, and save, if desirable, the pre-existing agencies of transportation.

3. In order to shoulder upon the motor vehicle common carrier obligations, financial and otherwise, in return for the rights given it to operate for a profit over all or certain highways within a state, especially so since the highways are built and maintained by the public. In some cases these rights take the form of valuable franchises which virtually grant monopolistic privileges over certain routes.

4. For the purpose of eliminating the irresponsible, so-called "fly-by-night" companies and individuals who, while undergoing certain destruction for themselves, pull down with the ruin well managed motor transportation agencies which render a real public service and are entitled to a reasonable return on their investments and a stabilization of their business.

Opponents of state regulation of the motor vehicle common carrier, on the other hand, maintain:

1. That granted motor transportation for hire is a public utility, public interest can best be served by unrestricted competition and complete freedom from regulation in which none but the fittest can survive. This policy, they contend, will yield to passengers and shippers the maximum of results with the minimum of cost.

They deny any analogy between motor vehicle common carriers and railroad and trolley transportation agencies, pointing out that the latter by virtue of private ownership of franchises, rights-of-way, roadbeds, tracks and terminals have an exclusive and monopolistic control over all transportation on their routes. Motor truck operators, on the other hand, even where granted a monopoly of transportation for hire over a certain prescribed highway or portion thereof, cannot deny the use of that highway to others who wish for themselves or as private carriers to transport persons or property over those same routes.

Finally, they point out that governmental regulation of rail and trolley common carriers came after these agencies had abused their rights and through pools, stifling of competition, exorbitant increase of rates, discrimination, stock watering, etc., made it necessary for the public in self-protection to subject them to control. By the very nature of the service these evils are impossible with motor transportation since the road is free to the use of every one and motor vehicles are quickly, cheaply and in unlimited numbers available for every one.

2. Since the obvious outcome of the first argument is "cut-throat" competi-

*Abstract of paper presented at midyear meeting of New York Electric Railway Association, New York, Jan. 25, 1923.

tion between various forms of transportation attempting to serve a certain territory, the opponents of state regulation do not attempt to ignore the logical consequences of such a struggle. They claim that wherever any existing form of transportation for hire cannot stand up before a newer and better form, public interest demands that it should give way; likewise, within that newer and better form of transformation, the rule should be survival of none but the most efficient and economical agencies.

Even though such a policy may mean the destruction at times of more or less invested capital, as it did when rail and inland water transportation first came into acute competition, they are confident that the final economic benefits to the community as a whole will many times compensate for the loss involved.

3. As for shouldering upon motor transportation for hire financial and other burdens which it should rightly carry, opponents of state regulation say that if the only questions involved are to determine the weight limits for motor vehicles used as common carriers, their registration fees and other charges, their liability to the public for injury to persons or damage to property, etc., these are not sufficient to warrant almost unlimited regulation in all other respects by a state agency.

4. Lastly, those against state regulation believe that the natural working out of economic laws will do more to stabilize the motor transportation for hire business than extensive interference on the part of governmental agencies of any sort.

Position of the Conference Committee

After a thorough investigation of the experience which the various states have had with regulation of motor vehicle common carriers and after a canvas of the views of hundreds of interested parties, the Motor Vehicle Conference Committee, composed of representatives from the American Automobile Association, Motor & Accessory Manufacturers' Association, National Automobile Dealers' Association, National Automobile Chamber of Commerce and Rubber Association of America, has concluded that granted a state deems regulation of motor vehicle common carriers necessary, the following fundamental principles should underlie laws on the subject:

1. Control over interstate transportation of persons and property for hire, over regular routes or between fixed points, if adopted, should be exclusively in the hands of some agency of the state. No power whatever in the premises should be vested in the governing bodies of the municipalities of the state.

2. Such state control over motor vehicle common carriers should be placed in existing commissions, such as the public utility commission, etc., of the various states. It should be provided, however, that at least one member of such a commission should be conversant with and in sympathy with motor transportation.

3. As a prerequisite to the operation of a motor vehicle common carrier, the owner thereof should be obliged:

(a) To obtain a certificate of public convenience and necessity with a proviso that lines in actual operation before the law goes into effect shall prima facie be regarded as necessary to public convenience and necessity and should, therefore, automatically be granted a certificate.

(b) To take out liability insurance adequate to idemnify injuries to persons or damage to property resulting from negligent operation.

4. The state regulatory bodies having control over motor vehicle common carriers should be vested with the same powers they exercise in controlling other forms of public utilities.

5. Any special or extra fees levied upon motor vehicle common carriers should be utilized exclusively for highway maintenance. Such special or extra fees should in no case be more than 100 per cent greater than the normal registration fees for the vehicles of the class to which they belong.

6. Legislation should be enacted enabling steam railroads, trolleys and shipping companies to acquire, own and operate the motor vehicle in conjunction with their regular line of business.

Reliability and Cost of Catenary Insulators*

Among the Subjects Discussed Are the Relation Between Working Load and Cost of Insulator, Effect of Depreciation and Comparison of Different Insulator Types for Different Estimated Cost of Interruption

By Arthur O. Austin
Chief Engineer Ohio Insulator Company

THE catenary line insulator is subjected to mechanical loads and electrical stress due to the normal voltage, as well as to surges due to switching or sudden changes in the current flowing in the system, and to lightning. When we look at the simple catenary system using a single bracket arm, the problem looks very simple, but when we look at the large trunk system with a number of tracks the problem is decidedly complicated. The small single-track road with its light stresses, wood poles and relatively few insulators is unquestionably a better hazard than the large trunk system with its high mechanical stresses, steel structures and many insulators.

Fortunately, conditions are not as bad as they seem, for the reliability of the insulation is simply a matter of cost. Since cost is a controlling factor in producing reliability it is interesting to see in what manner the properties of the catenary system affect the cost of the insulator.

For direct-current systems the insulation is comparatively simple from the standpoint of the insulator, although line surges due to interruptions of the current may be relatively higher in a long line for direct current than for alternating current.

In so far as the main messenger insulators are concerned, it matters little whether insulators on adjacent messengers are operating on the same or on different phases, or with one positive and the other negative, with the full voltage to the track or ground on each. This arrangement, however, requires a material increase in the insulation between the contact systems at other points than at the supports.

Since the amount of power which may be transmitted over a conductor with a given percentage loss increases as the square of the voltage, there is material saving in conductors and supporting structures by going to higher voltages. Higher voltages reduce the difficulty of current collection, which is a difficult problem where high speeds or large amounts of power are needed. The reduction in current at the higher voltages is also a material factor in reducing inductive interference with signal lines.

Where the suspension type of a series of strain insulators is used, higher voltages simply necessitate an increase in the number of sections in the insulator. Where the messenger runs over the top of a rigid insulator, increased voltages are handled very readily unless the mechanical loads are exceedingly high. Where the messenger is supported underneath a rigid insulator the problem is more difficult unless the mechanical loads are very light. The greatest difficulties with increased voltages are mechanical rather than electrical. This is particularly true where the suspension type of insulator is used, as the longer insulator required for the higher voltages permits a greater displacement of the contact wire during heavy winds.

While practically any degree of stability may be insured by the use of "V" strings or "steady" insulators, it is readily seen that these increase the operating hazard. (See Fig. 4.)

While increased voltages are desirable, it is recognized that the interchangeability of equipment tends to maintain voltages once established. In the a.c. system this is readily taken

*Abstract of paper presented at the mid-year meeting of the New York Electric Railway Association, New York, Jan. 25, 1923.

care of in the stepdown transformer. In the d.c. system the matter is not so simple when it is desired to operate equipment at a higher voltage, unless provisions have previously been made for such an arrangement.

As the general factors producing reliability are the same for the a.c. and for the d.c. system, the a.c. insulation will be discussed first, as the higher voltage used tends to show up the factors of cost and reliability to better advantage.

Effect of Mechanical Load on Cost of Insulator

Reference to Fig. 1 shows that as the maximum working loads increase, the cost of the insulator goes up very rapidly. The graphs are based on a factor of safety of three for the maximum load. A higher factor of safety is usually not advisable as the insulators may have a shorter life owing to higher thermal stresses either at the maximum or at the minimum temperatures. The difficulty of distributing the mechanical stress in the porcelain is also a factor where high ultimates are used. For this reason an insulator with a lower ultimate on test may have a higher effective reliability and permit a higher working load than an insulator of higher ultimate unless the latter is very carefully made.

If catenary lines are compared to transmission lines, it is well to bear in mind that the transmission voltage for an 11-kv. catenary system would be $11{,}000 \times \sqrt{3} = 19{,}000$ volts. This was recognized in making up the curves in Fig. 1. In these curves the 11-kv. catenary insulator corresponds electrically to a transmission line insulator from 20-kv. to 30-kv. rating. In the same way, a 22-kv. catenary insulator corresponds to a line insulator having a rating of from 33 kv. to 44 kv. The large and more important system also requires insulators of a higher rating than the less important system, hence high mechanical loads tend to increase the cost of the insulator for electrical reasons as well as for mechanical.

It is readily seen that for light mechanical loads the bridge or special pin-type insulator mounted over the supporting structures is much cheaper than the suspension or strain type of insulator. For the higher working loads the reverse, however, is true. This is due to the fact that where the rigid type of insulator is used, high bending moments are set up, making the design costly. The rigid type of insulator is usually six to eight times stronger in compression than for side pull, and from two to three times as strong in tension.

Where a triangular catenary is used, it is possible to take advantage of the above, permitting the use of an insulator of moderate mechanical strength for high working loads, by inclining the axis of the insulator in the line of the resultant load. In addition to inclining the axis of the insulator, the grip on the messenger must be limited for longitudinal loads occasioned by a break in the messenger. This same construction may be adopted for curves. To allow the insulator to take the line of the resultant is also a distinct advantage in most of the rigid insulators where the messenger is supported from the under side of the insulator.

It naturally follows that for high electrical reliability the catenary system should be as light as possible. This is also desirable in order to keep down the cost of insulation. This matter should receive careful consideration, as an increase in the weight of one item usually entails an additional expense for others, making it very easy to increase the working tensions and cost for a system without improving the reliability.

As catenary systems using large messengers and contact wires have a more stable contact system, there will be a strong incentive to use heavy construction where the traffic is dense. Fortunately, practically any degree of reliability may be obtained in so far as the insulator is concerned if sufficient clearance is provided. If the straight suspension will not give sufficient mechanical stability, "V" strings may be used and a sufficiently high electrical reliability obtained by adding more sections.

More trouble has been occasioned in the design of catenary insulators owing to limitations as to clearance than to any other one cause, and it is well to decide on the system of insulation before any decision is reached as to the type of structure. A good rule to follow in laying out catenary lines is to decide on the insulators first and then settle the other details as to type and size of supporting structure.

Insulator Depreciation

It is not possible to cover this matter completely, but it is well to take into account the effect of depreciation on the reliability or operation of the system. This is particularly true where combined electrical and steam operation is necessary, for the heating from steam locomotives sets up very severe stresses in the insulator which tend to increase the rate of depreciation. There is also a sudden heating of the insulator due to the leakage of current over the surface when a locomotive blast strikes the insulator. Condensation from the hot moist blast striking the insulator is particularly severe where the insulator is below the supporting structure in main-line work or to one side in tunnels.

Complete electrification of steam roads will do much to improve conditions for the insulator and cut down the depreciation and resulting trouble, or to permit the use of smaller insulators.

Where steam locomotives are operated under catenary lines, the insulators are not only subjected to severe conditions due to the hot blast of the locomotives, but the surfaces are severely coated, necessitating more insulation than would otherwise be necessary.

Curves E and F in Fig. 2 show the lowering of operating costs which may be effected on an old system by the change in type of insulation permitted by increased clearance. This study also shows the marked advantage in lowering the operating cost, due to going over the system and weeding out faulty material wherever possible. In this connection, it is well to bear in mind that any two-piece insulator or two-section insulator may be tested out without disconnecting it from the line. This is a very important point to be taken into consideration in insulating even a low voltage system.

In two-part insulators the depreciation is likely to be more in one part than in the other. This applies to pin types, pendent or suspension insulators. Providing a single part of the insulator is large enough to carry the entire load and the other part should fail, the reliability will be very much higher if a given per cent depreciation based on a total number of parts is largely confined to one part of the insulator.

In Fig. 3 the total annual cost for different sized insulators is compared. It is readily seen that if the depreciation is exceedingly small a material saving may be effected. It is for this reason that many improvements have been added to the suspension insulator within the last few years in order to secure a low rate of depreciation. These improvements have necessitated an increased manufacturing cost, but this is made up a number of times, as a fewer number of sections may be used so that the final cost per thousand strings is very much less for a given standard of operation.

In deciding upon an insulating system, it is very important that the relative hazards of the different systems be given careful consideration, as this affects the annual cost of the interruptions very materially. In Fig. 4, several different insulating systems are compared with the same basis of depreciation. A study of this figure indicates the possible advantage of single insulating systems as against multiple systems where the same rate of depreciation obtains.

Fortunately improvements added to the insulators within the last two or three years make it possible to produce high ultimate strings with a low depreciation rate. This is a distinct advantage, as in the past insulators having a high mechanical ultimate have had a much higher depreciation rate. It is advisable to use a high ultimate insulator so as to take advantage of the lower hazard due to the single string as against the multiple string only where the insulators are of the most refined design.

Reliability as Affecting Cost

The value of reliability is really the determining factor in the selection of the insulator system. The cost of interruptions varies, depending upon the importance of the system or the service desired.

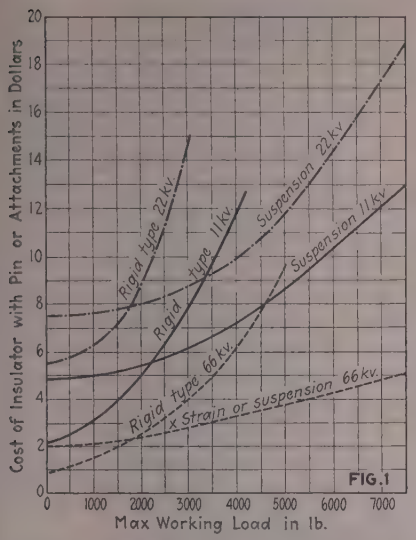

Cost of Insulator with Pin or Attachments in Dollars
Max Working Load in lb.
Rigid type 22 kv.
Rigid type 11 kv.
Suspension 22 kv.
Suspension 11 kv.
Rigid type 66 kv.
Strain or suspension 66 kv.
FIG.1

Fig. 1—Relation between working load and cost of insulator.

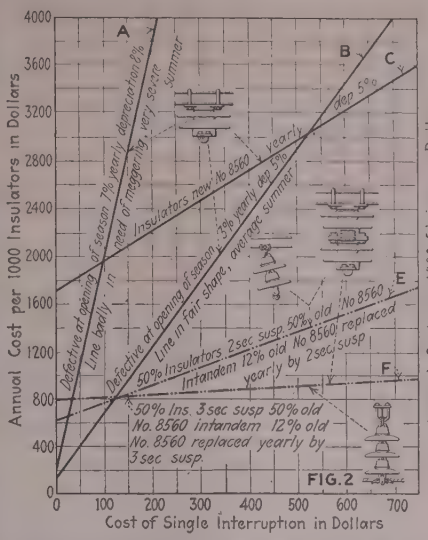

Annual Cost per 1000 Insulators in Dollars
Cost of Single Interruption in Dollars
A
B
C
D
E
F
Defective at opening of season 7% yearly deterioration 6% Line badly in need of maggerning, very severe summer
Insulators new No 8560 yearly
dep 5%
Defective at opening of season 3% yearly dep 3% Line in fair shape, average summer
50% Insulators 2 sec. susp. 50% old No 8560 Intandem 12% old No 8560 replaced yearly by 2 sec. susp
50% Ins. 3 sec susp 50% old No. 8560 intandem 12% old No 8560 replaced yearly by 3 sec susp.
FIG.2

Fig. 2—Annual expenditure required for different insulators and combinations affected by average cost of interruptions.

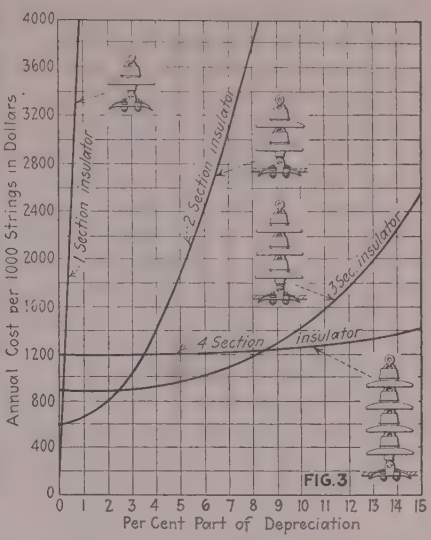


Fig. 3—Effect of depreciation on the annual cost of various sizes of insulators. Fixed charges, 30 cents per section; average cost of interruptions, $500.

Where the value of reliability is slight it is a mistake to over-insulate the system, as the fixed charges for insulators and supporting system would be out of all proportion to the saving effected by reducing the probable number of interruptions. Where the system is large it is simply a matter of good business to capitalize the interruptions on a proper basis and balance this against the fixed charges. Fig. 5 shows the annual cost for one thousand insulator strings, for various average interruption costs.

While the information in Fig. 6 may be obtained from Fig. 5, the relation between the number of sections and the annual cost is shown to better advantage in Fig. 6.

By referring to Fig. 5 or to Fig. 6, it is seen that a three-section insulator is the most economical where the cost of an average interruption does not exceed $275. It is further evident that there is little saving in the operating cost for a three section insulator until the cost of an interruption exceeds $500. Even where an interruption costs only $50, it is seen that a three section insulator costs approximately the same as a two section. Interruption costs would have to exceed $2,000 to necessitate more than four sections in the string.

The conditions assumed in these studies are not based on the line in good condition, but under conditions which may prevail after some years of operation, or where they are severe.

The rates of depreciation are probably on the safe side, but in the past considerable expense has been incurred by not allowing sufficiently for this factor. In setting the rate of depreciation it must be remembered that the fragile dielectric in the insulator works under a factor of safety smaller than any part of the system. This factor of safety is largely independent of the working load applied, and seldom exceeds 2 or 3.

If reference is made to the several studies, it will be seen that insurance costs but little if any more and may safeguard an investment running into millions.

The same general rules apply whether the system is a.c. or d.c. The

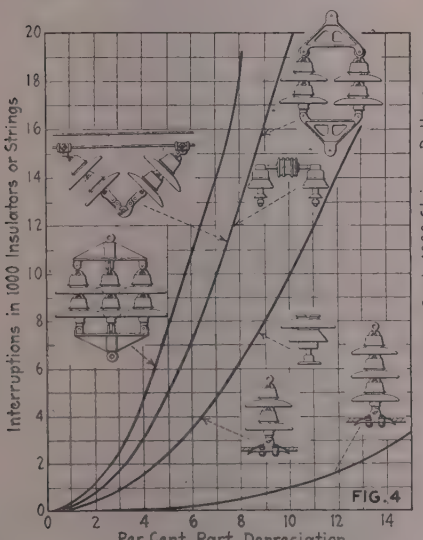


Fig. 4—Comparative reliability or hazard for different insulating systems. Interruptions based on probability of matching up of faulty parts in same insulator with 5 per cent part depreciation.

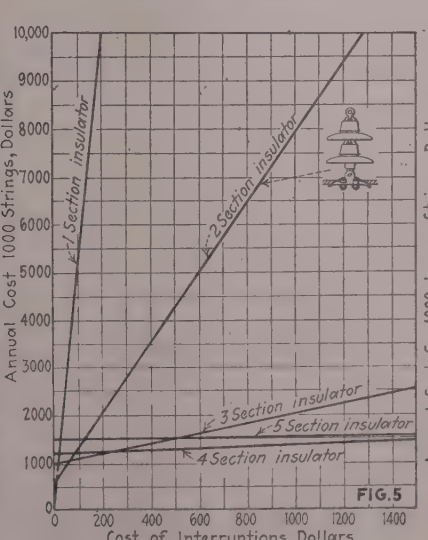


Fig. 5—Annual cost of 1, 2, 3, 4 and 5-section insulators for different interruption costs. Fixed annual charges, 30 cents per section; annual part depreciation, 5 per cent; accumulated part depreciation, 15 per cent.

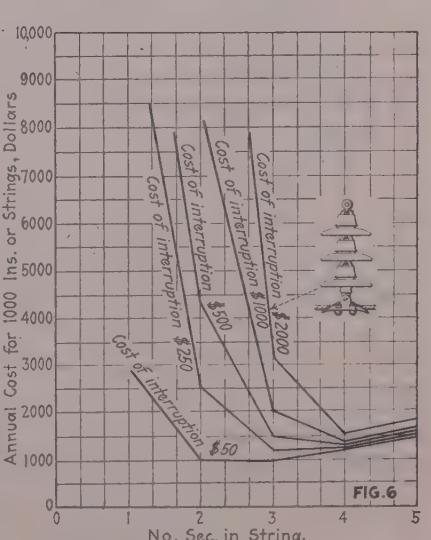

Annual Cost for 1000 Ins. or Strings, Dollars
No. Sec. in String.
Cost of interruption $250
Cost of interruption $500
Cost of interruption $1000
Cost of interruption $2000
Cost of interruption $50
FIG.6

Fig. 6—Total annual cost including fixed charges and probable cost of trouble due to depreciation for different number of sections in insulator, and for different interruption costs. Fixed charges, 30 cents per section; annual part depreciation, 5 per cent; accumulated part depreciation, 15 per cent.

size and type of insulator, however, might be materially different.

Reliability of Transmission and Distribution System

The reliability of the transmission and distribution system is of even more importance than that of the catenary system.

While a train may coast through a defective section on the catenary system, a complete shutdown results if the main transmission line or distribution system fails. Fortunately, the reliability of the transmission system is much more readily controlled than that of the catenary system. Not only is the hazard very much less, due to fewer insulator strings and supporting structures involved, but in addition, the high voltage system is practically free from lightning and bird trouble.

While it is true that some of the large trunk systems have been subjected to spill-overs under comparatively mild conditions, I believe that there is little question but that these spill-overs may be eliminated by applying our present knowledge of the art.

In studying the trunk or superpower line, it is well to bear in mind that the stored energy increases as the square of the voltage and that this energy feeding into an arc may cause a flashover of the system at a relatively low voltage. While this condition has been quite serious on some large transmission systems, practically no provision has been made to prevent it. Too much attention has been paid to the wet and dry flashover of the large insulator strings at normal frequency and not enough to the possibility of the stored energy feeding into an arc started by a transient.

Fortunately, a system has been developed which makes it possible to prevent an arc forming at the insulator or in the vicinity of the tower under conditions which will cause an arc to strike from the conductor 15 or 20 ft. out on the span. Where conditions of this kind are set up, it is apparent that we need have no concern for the insulator. This matter was treated in a discussion before the N.E.L.A. convention at Chicago in 1921 and in a paper before the International Congress at Paris in 1920.

In this connection it might be well to say something in connection with the frequency. For the very long lines, it is apparent that harmonics are much more likely to develop resonance with a high frequency than with a low frequency. If a high normal frequency for the transmission line is used, it is well to bear in mind that more precautions will have to be taken to insure a good wave form and the absence of disturbances, as these may cause the line to arc to ground, through no fault of the insulator, at 60 cycles, where there would be little or no trouble at 25 cycles.

The control system which has been developed for use on extremely high voltage lines is applicable to catenary lines in order to prevent spill-overs due to lightning or to other transients, and it is possible that old systems which lack clearance, or systems which are having trouble from spill-overs may be materially changed by use of the control system or caged conductor.

Regardless of any difficulties which may have appeared in the past, it is certain that catenary and main-line transmission insulation is on a basis that will permit the highest degree of reliability at a comparatively low cost.

Many Speakers at Indianapolis Utility Meetings

Testimony Was General that State Commission Regulation Is Better than Municipal Regulation or Municipal Ownership of Utilities—Addresses Were from Public Officials, Utility Men and Industrial Leaders

THE folly of public ownership of utilities, care on the part of utilities in rushing into Federal Court under the provisions of the Fourteenth Amendment in appealing from decisions of public service commissions, closer co-operation between utilities and the public, the labor situation and many other matters of peculiar interest to public utilities were discussed at the third annual meeting of the Indiana Public Utility Association, held in Indianapolis on Jan. 25.

The meeting began with a closed session in the morning, at which a general discussion of the report of the committee on public utility information was had and officers elected. The public information committee reviewed the work done during the past year and showed by a mass of documentary evidence in the shape of clippings from virtually every paper in Indiana the value of getting the utilities' viewpoint presented properly before the public.

C. L. Henry, president Indianapolis & Cincinnati Traction Company, was re-elected president. Others elected were as follows: S. E. Mulholland, vice-president Northern Indiana Gas & Electric Company, vice-president; F. J. Haas, vice-president Southern Indiana Gas & Electric Company, vice-president; Marshall V. Robb, secretary Wabash Valley Electric Company, secretary, and Charles C. Perry, president Indianapolis Light & Heat Company, treasurer.

At a noon luncheon Taylor Groninger, corporation counsel of Indianapolis, and Gov. Warren T. McCray of Indiana gave addresses. Mr. Groninger not so long ago was one of the leaders, under the supervision of Mayor Lew Shank, in seeking legislation to abolish the Indiana Public Service Commission. In his address he commended the work of the Public Service Commission, but he also warned utility interests against rushing into Federal Court in rate case appeals before making their appeal to the state courts. He held that state machinery should be used before resorting to the United States courts. "There should be no antagonism whetever between the public and the public utilities," he said. "Public utility property is given over and devoted to the service of the public. Many safeguards have been thrown about it which make investments secure, and the service has been made efficient. A still closer relationship may be fostered if the operators will be more frank with the people and be content with a fair return on the reasonable value of their properties."

Governor McCray in a brief talk declared that he was for the public service commission law and would do all in his power during this and subsequent legislatures to prevent any amendments to the law which will in any way curtail the effectiveness of the work of the commission. He said there was no doubt that the majority of the citizenship of the state wants the commission and is, in the main, satisfied with its work.

By a coincidence Senate Bill No. 35, which provided that all utilities valuations for rate-making purposes should be based on the amount of assessed valuation on the tax duplicates, was postponed indefinitely on the day of the convention.

James P. Goodrich, president National City Bank of Indianapolis and formerly Governor of the state, thought that not one in ten citizens wanted the public service commission abolished. He saw some elements of danger in the large consolidations such as are now being perfected. He also saw a danger in too frequent appeals to the Federal Courts. On this point he said: "There is a savor of public ownership element which might grow out of too many of these appeals, and we all know what we think of public ownership. This court should be used as a case of last resort."

B. J. Mullaney, director of the committee of public utility information of Chicago, gave a talk on the experiences of utilities in Illinois with commission regulation. He traced the law from its inception to the present time, through three state administrations, and declared it was very easy to mistake noise for numbers in agitation against a public service commission. The feature of this talk was the fact he brought out that in Illinois, under the latest provisions of the law, it is possible for any city to vote itself out from under the workings of the law by popular vote and go back to the "home rule" system. In spite of agitation against state regulation, not a city in the state has done this yet, though they have had ample opportunity.

G. B. Maxwell, former secretary of

the Ohio Public Service Commission, said the public should understand the necessity for new capital for extensions of service and of the problems of utility companies, particularly in the matter of taxation. He told of the troubles of those utilities in Ohio which were not under the public service commission.

Talks on Different Utilities

Short talks then followed on experiences of the different classes of utilities. Arthur W. Brady, Anderson, spoke for the interurbans; Howard Dill, Richmond, for the water companies; T. E. Bohn, Fort Wayne, for the telephone interests; S. E. Mulholland, Fort Wayne, for the gas companies and Harry Reid, Indianapolis, for the power and light interests.

Mr. Hurley Speaks on Public Ownership

At the banquet in the evening, customer ownership and not government ownership was urged as the real remedy for economic ills by Edward N. Hurley of Chicago, former chairman of the United States Shipping Board. He said in part:

"The federal government's venture into the field of public management of industrial and public service enterprises demonstrated conclusively that not more than 50 per cent personal efficiency can be obtained under such management. I speak advisedly and out of full and intimate knowledge of the facts, and I do not hesitate to add that this average of 50 per cent gradually decreases the longer the individual manager or the individual employee continues in industrial service under public management. It narrows down to this: Do we get as good service in the city hall as we do in a department store? How long would a department store stay in business with city hall service?

"One indictment that has been made of the American business man is that he neglects public duties. The farmer is quick to put forward every effort to improve his condition. Labor exerts itself to heal its wounds and strengthen its position both with the public and governmental authorities. The business and industrial executive, however, is prone to concentrate upon his business to the exclusion of other things. It results too frequently that he is called on the defensive in legislative matters where there is no need or reason for him to be on the defensive. Many business men do not know the names of their representatives in their state legislatures. What can we expect from men when we display such indifference toward them and their policies?

"Refuse to be on the defensive when you are not really called upon to occupy such a position. Drive home the fact that whereas the public utility owes an obligation to the public, there is an equivalent obligation which the public owes to the public utility company."

The Authority, Duties and Responsibilities of the Safety Chairman*

This Official, the Author Believes, Will Come Gradually to Replace the Claim Agent—An Efficient Accident-Prevention Plan Should Involve Every Person Connected with the Electric Railway Organization

By Neil W. Funk
Director of Safety Louisville Railway

THE principles of safety and of accident prevention have probably developed faster during the past few years than any other ideas in the community. The peace-time call to make travel through our streets and work in our industrial plants safe has been responded to with enthusiasm by the street railway industry. As progress is made in the direction of reducing accidents, the work of the safety department will gradually come to replace that of the claim department. The claim agent will become the safety chairman or director of safety.

The director of safety has "arrived" in the electric railway industry. His primary duty is to organize the rank and file of the company's men along safety lines. This can best be done by having a complete safety unit in every department.

Our policy is to have the men elect their own safety committee men through their welfare association. Three men thus elected select one of their own number as chairman. This unit is supreme in authority as to safety matters in the particular department where it functions. Our idea has been to have from every carhouse, as members of these units, one motorman, one conductor and one motor inspector. This gives co-ordination along safety lines of the mechanical and operating branches. We also have units consisting each of the same number of men from other departments, such as power house, construction department, car shops, etc.

The chairmen of these units should be called together by the safety chairman at least once a month for conference and discussion. This gives an opportunity for the safety chairman to explain the elementary principles of street railway law, which is important because many a man violates the law unwittingly. Little should be heard from the safety chairman after the first meeting, as the chairmen of the units will have suggestions which they are anxious to make and hear discussed.

During two years we have received about 500 suggestions along safety lines, of which probably 425 were useful and practical. It is the duty of the safety chairman to secure action by the company on every possible suggestion made by safety committeemen. Our entire safety organization is changed every three months, so that in time every employee will have had a three months course in safety in one of the safety units.

The safety chairman in our organization accompanies an inspection committee once a month on a tour of the company's property. This committee comprises one motorman, one trackman, one wireman, etc., until we have every division of labor in the company's organization represented. The results of this work have been very satisfactory.

The safety chairman should never become involved in matters of discipline. He should not have the authority either to employ or discharge men. The chairman should, however, have an opportunity to talk to every new platform man employed, and he should know personally every member of the company's organization from the president to the car cleaner. He should know the men well enough so that each considers him a friend.

It has been said that eternal vigilance is the price of liberty; at the same time it is the price of safety. Ordinarily men are not careless, but the work of a platform man in time becomes somewhat monotonous and he is apt to become careless. Our experience is that the older men cost us more money in the way of settling accident claims than the new ones. This occurs because the new man has more confidence in safety appliances than in his own ability, while the reverse is true with the older men. This shows that safety is largely a question of constant suggestion as to the possibility of accident. No safety bulletin should be issued without the approval of the safety department, and such bulletins should be designed by a member of the company organization in order to secure attention.

The safety chairman should be ready to aid all public safety movements in his community outside of his own organization. It should be his duty to support the National Safety Council, which necessarily is of more help in the electric railway industry than in other industries.

In conclusion I wish to mention an important safety development in Louisville, known as the "Life Savers' Club," which is sponsored by the *Courier-Journal* and the *Times*. Every motorman and truck driver who operates for a year without an accident is awarded membership in this club, with a button to indicate such membership. Such recognition furnishes a strong incentive to carefulness.

*Abstract of an address before the annual meeting of Central Electric Railway Association, Louisville, Ky., Jan. 18 and 19, 1923.

International Engineering Congress Plans for 1926

PLANS for an International Engineering Congress to be held at the time of the sesquicentennial celebration in Philadelphia are well under way and were reviewed at a meeting held under the auspices of the committee on plan and scope in New York City on Jan. 9. At the meeting the following topics were discussed: Scope of the congress, finance, relation of meetings of engineering societies to the sessions of such a congress and publicity. The board of management for the congress has been organized, with temporary officers and with representation from the American Society of Civil Engineers, the American Institute of Mining & Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the Federated American Engineering Societies and the Engineers' Club of Philadelphia.

New England Street Railway Club Will Meet in February

THE February meeting of the New England Street Railway Club will be held at the Copley Plaza Hotel, Boston, Feb. 8. At the afternoon meeting George E. Pellissier, assistant general manager of the Holyoke (Mass.) Street Railway, will read a paper on "Co-operation." The evening meeting will be addressed by Wallace B. Donham, Dean of Harvard School of Business Administration. Mr. Donham was at one time receiver of the Bay State Street Railway.

American Association News

Further Midyear Program

ACCEPTANCES have been received by Secretary Welsh from the following men to discuss the principal addresses at the midyear meeting in Washington, on Feb. 16. The morning address on "Regulation" by the Hon. Dwight N. Lewis will be discussed by Henry L. Doherty, Col. Charles Keller, chairman District of Columbia commission, and C. E. Elwell, member of the Connecticut commission.

The address in the afternoon on "Taxation" by Senator F. N. Davenport will be discussed by Alexander Forward, member of the Virginia commission, and Alfred T. Davidson, general counsel Third Avenue Railway, New York.

At the evening banquet, in addition to the Hon. Albert Bacon Fall and former Vice-President Thomas Riley Marshall, who have already been announced as speakers, President C. E. Emmons will make an introductory address in which he will discuss the fundamental conditions in the industry, and there will also be an address by Thomas N. McCarter, president Public Service Railway.

Way Committee Holds Two-Day Session

A MEETING of the way committee of the American Electric Railway Engineering Association was held at association headquarters, New York on Jan. 25 and 26. The following members were present: W. F. Graves, chairman, Montreal, Canada; H. H. George, vice-chairman, Newark, N. J.; R. C. Cram, sponsor, Brooklyn, N. Y.; C. A. Alden, Steelton, Pa.; V. Angerer, Easton, Pa.; S. Clay Baker, East St. Louis, Ill.; E. B. Entwisle, Johnstown, Pa.; R. B. Fisher, Harvey, Ill.; Charles F. Gailor, New York, N. Y.; J. H. Haylow, Memphis, Tenn.; E. M. T. Ryder, New York, N. Y.; A. T. Spencer, Toronto, Canada; Francis Tingley, Washington, D. C., and W. W. Wysor, Baltimore, Md. S. G. Hughes attended in place of H. Fort Flowers, and H. F. Hile of the Wharton Company was also present.

Mr. Alden, chairman of the sub-committee on subject No. 1, which is making a study of the standardization of frogs and car clearance easements, gave a general outline of the status of the subject and also presented some conclusions of the committee regarding this. An elaborate method for materially reducing the number of standard frogs required in the various layouts was presented. The plan was discussed very generally and suggestions for modification were offered.

Mr. Baker, chairman of the sub-committee in charge of subject No. 2, which is studying design of substitute ties, outlined the problems confronting the committee. The subject was discussed in detail and it was agreed that the sub-committee should proceed to establish in detail the desired and practical features of a substitute tie and then, if possible, determine how nearly the present substitute ties met these requirements.

Mr. Haylow, chairman of the sub-committee in charge of subject No. 3, which is appointed to co-operate with the committee on buildings and structures on the design of small bridges, culverts and trestles, reported results of a meeting with the committee on buildings and structures held at association headquarters on Jan. 24. The committee will continue its work in developing the subject suggested.

Mr. George, chairman of sub-committee No. 4, which is pursuing a study of the design of track construction for paved streets, presented a set of specifications for consideration. These were discussed in considerable detail and a large number of corrections were decided upon.

Mr. Wysor reported on Subject No. 5, which includes an investigation of all forms of welded rail joints and described in detail the design of the proposed rotary testing machine which is being considered by the committee on welded rail joints. This committee will keep in touch with the welded rail joints committee with the idea of assisting and making any suggestions possible.

In connection with Subject No. 6, which consists of a review of existing standards and recommendations for presentation to the American Engineering Standards Committee, C. W. Squier, representative of the association on the sectional committee dealing with the standardization of bolts, nuts and rivets, reported as to the work which was being accomplished in connection with the standardization of track bolts. A print showing the average dimensions of bolts which were obtained from a study of the track bolts being used on a number of representative electric railways was presented to each member of the committee and their criticism was requested.

Mr. Entwisle, chairman of the committee on subject No. 7, which was appointed to revise the specifications for manganese steel switch pieces, reported on the work already undertaken and it was decided to give the matter further study. A further report will be made at the next meeting.

Merchandising Transportation

PLANS for the work for the ensuing year of the T. & T. committee on merchandising of transportation were outlined at a meeting of the committee with Chairman Samuel Riddle in Louisville on Jan. 19. Those present besides the chairman were W. H. Boyce, sponsor; F. L. Butler, J. A. Dewhurst, F. D. Norveil, G. S. Brush, C. L. Van Auken and Labert St. Clair.

It was decided to centralize the committee's study on the weekly pass, methods of increasing the freight business and business producing display advertising through newspapers, window signs and other mediums. A special study of increasing interurban business will be made. Sub-committees are to be announced within the next few days by the chairman.

Stores Accounting

AT a meeting of the Accountants' Association committee on stores accounting, held in New York City on Jan. 23, it was decided to make a study of inventories in co-operation with the committee on purchases and stores, of which B. J. Yungbluth is chairman. After discussion of the joint committee report on stores accounting, presented and discussed at the 1921 convention, it was concluded that the recommendation made then, that the formulated materials classification should be adopted as standard practice, should probably be reaffirmed this year.

The New York meeting was attended by R. A. Weston, the Connecticut Company, New Haven, chairman; C. L. Bartlett, Haverhill, Mass., and A. E. Hatton, Pittsburgh, Pa.

Maintenance of Equipment

Rearranging Wheel and Axle Shop for Lower Cost and Higher Production

BY H. E. HOCHETTE
Third Avenue Railway, New York, N. Y.

A GENERAL rearrangement of the machinery in the Sixty-fifth Street shops of the Third Avenue Railway has recently been carried out, and along with this has come a complete revision of the facilities for handling wheel and axle repairs. As a result of the changes made, the production of pairs of wheels (drivers and ponies) necessary for supplying the material department and for delivery to the truck overhauling shop and various carhouses has been increased 50 per cent. This increase parallels a 20 per cent reduction in the cost per pair of wheels handled, and, further, the frequent peak demands which formerly caused no little difficulty can now be taken care of without effort.

In order to understand the demands made on the wheel and axle department of the Third Avenue Railway, a few of the essential requirements will be enumerated. The company operates 1,600 cars from eleven carhouses. Forty-six per cent of these cars operate over tracks with the underground conduit contact system. Forty-nine per cent use the overhead trolley contact system, and the remaining 5 per cent are storage-battery cars. General overhauling, reconstruction and all but minor repairs are done at the central Sixty-fifth Street repair shop, which simplifies the work to a great extent. On an average twenty-five pairs of steel driver wheels and fifty pairs of cast-iron pony wheels are handled by the wheel and axle department every day.

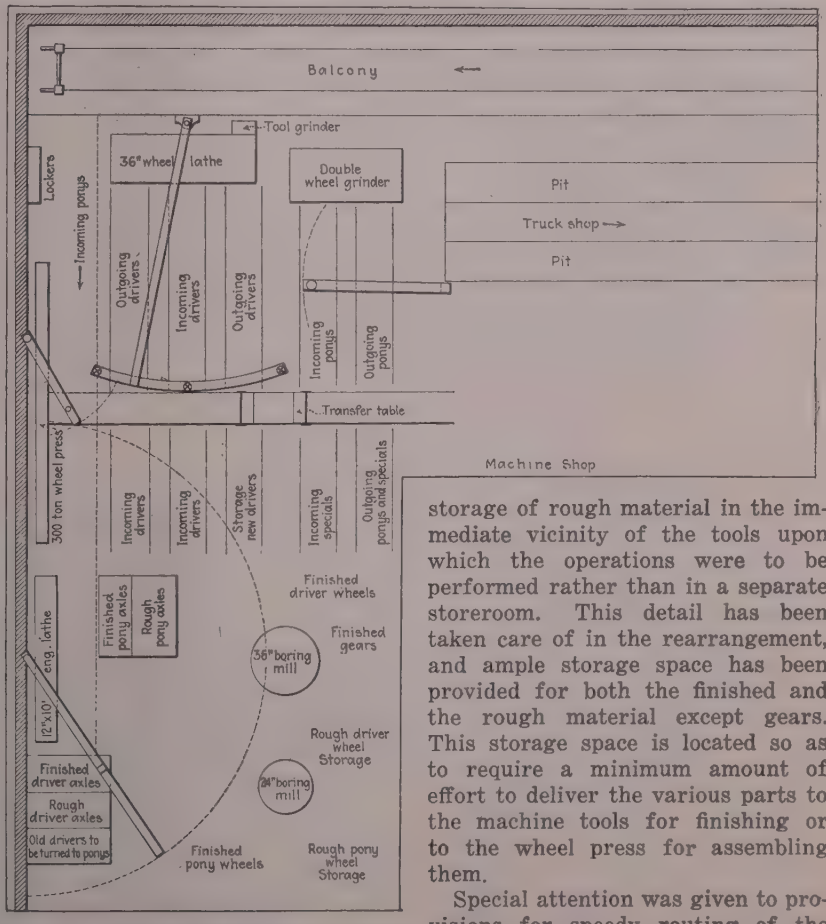
The men who carry on the work in the wheel and axle shop consist of one boring mill hand, who is also the inspector as well as the leader; one axle lathehand; one wheel lathe hand; one wheel-press man, and a helper, who also handles the wheel grinder and general work. This makes a total of five men in the organization at the present time. Previous to the changes made in this department, there were a total of seven men required.

The accompanying illustration shows the layout of the tracks, the location of the various machines, and the cranes used for handling wheels and axles. The machine tools include one 300-ton wheel press, which has been recently overhauled, and in addition to some minor changes has been equipped with a new cylinder lining, which has increased the output of this press considerably. A hydraulograph was attached to the press, so that a graphic record of every press made is now obtained and detailed studies of these records have furnished much interesting and valuable information. Other machine tools, which were overhauled and relocated, included a 36-in. boring mill for steel driver wheels and gears, a 24-in. boring mill for cast-iron pony wheels, and a 12-in. x 10-ft. engine lathe for finishing and turning both driver and pony axles.

The 36-in. wheel lathe was given a rather extensive overhauling, which included the providing of two new toolposts as well as parts for the old ones, which are now held in reserve. The overhauling and purchase of these new toolposts have provided a very efficient machine and have resulted in increased production and lower unit cost. In addition to this equipment one double-wheel grinding machine was overhauled and the power transmission rigging was greatly improved. A new exhaust system has also been installed.

Previous experience showed that it was advisable to provide for the storage of rough material in the immediate vicinity of the tools upon which the operations were to be performed rather than in a separate storeroom. This detail has been taken care of in the rearrangement, and ample storage space has been provided for both the finished and the rough material except gears. This storage space is located so as to require a minimum amount of effort to deliver the various parts to the machine tools for finishing or to the wheel press for assembling them.

Special attention was given to provisions for speedy routing of the parts through the shop. The accom-



Sketch of Rearranged Wheel and Axle Shop, Third Avenue Railway

panying layout of the tracks shows the orderly and compact arrangement provided for the assembled units. A transfer table was installed for handling the work to and from the various tracks, and cranes have been located so as to serve all machines and to handle the material in an efficient manner. The wheels and axles are received in this department, either from carhouse supply cars which run into the shop on a balcony, as shown in the accompanying layout, or from the truck overhauling shop, which is adjacent to the wheel shop. Both of these sources are served, along with other departments, by an overhead traveling crane, which delivers drivers and ponies to their respective incoming tracks. After inspection the units are routed in three ways. First to the wheel press for dismounting, if any part is to be scrapped or should the axle need to be turned; second to the wheel grinder, and third to the wheel lathe for turning to gage.

The wheel press is served from the floor by the transfer table and by a 1-ton piston air hoist trolley, which is mounted on a 10-ft. jib crane. A study of the layout will show how the dismounted material is disposed of and how the supply of new material is handled. After the units have been newly assembled, they are routed either direct to the wheel lathe or grinder if work by these tools is required, or to the outgoing tracks for inspection.

The wheel lathe is served by a 1-ton electric hoist trolley mounted on a 22-ft. radial roller crane as shown in the illustration. The wheel grinder is served by a 1-ton piston air hoist trolley mounted on a 10-ft. jib crane. Finished units from either of these two machines are shifted by hand to their proper location for inspection. A 20-ft. jib crane equipped with a 1-ton chain hoist trolley takes care of the axle lathe, while the boring mills are served by a built-in jib crane.

This rearrangement and overhauling of machinery and the provision of the labor-saving devices for handling have not only increased the production and lowered costs to a marked degree, but have also enabled the making of inspections in a more orderly manner, and to visualize the reserve stock of units more easily at any time of the day. A further result of the change is the effect it has had in helping to obtain maximum advantage from the piecework system which is now employed.

The Trucks Line Up Behind the Loader and Are Backed Into Position for Receiving Their Loads

Railway Company's Snow Loader Helps Dig Out Boston Streets

TWO snow-loading machines purchased by the Boston Elevated Railway are being given almost continuous service due to the large snowfall which has occurred during January in the New England district. These machines were purchased from the Barber-Greene Company, Aurora, Ill., and the first was put in operation on Wednesday, Jan. 3, and it continued in service without any overhauling up to Sunday night of that week. Crews were broken in so as to keep the machine working continuously. The second machine was brought into the Huntington Avenue grounds on Wednesday afternoon, Jan. 10, and was unloaded and working on the street at 8:45 p.m. It is thus evident that no time was lost in getting the machine into service.

Accompanying illustrations show the machine in operation. It can load trucks faster than they can take the snow away. As compared with the use of flat cars and shovelers, tip carts and snow sleds, this machine has been able to do the work of 100 shovelers to each shift.

The snow loader is of the crawler traction type. It has full length continuous tread 58 in. long by 8 in. wide and can be fitted with non-slip cleats when extra traction is desired. The track is cast integral with the link and the chain and sprockets are protected. The truck frames are made of fabricated structural sections, the tread links of cast steel, and the carrying rollers of chilled cast iron.

The snow elevator consists of a rubber belt 32 in. wide, which has cross-angle flights or cleats every 20 in. Twelve-inch skirt boards are placed on either side of the elevator to help hold the snow and to gain an effective carrying width of 35 in. Two shaving plates of hardened steel

Scooping Up the Snow and Loading Into Truck

extend out on either side and ahead. These are placed immediately in front of the lower belt pulley and give a cleaning width of 6 ft. The whole arrangement has a quick acting up and down adjustment at the operator's platform. This adjustment is provided for passing any obstructions such as manhole covers or for setting the scraper to shave the surface clean. The machine is driven by a four-cylinder Buda gasoline engine and travels forward at a speed of 40 ft. per minute and has a reverse speed of 107 ft. per minute.

The operator has one lever for steering coupled to outside adjustable brake bands operating on brake drums which are located at each end of the differential shaft. By throwing the lever to the right the machine turns to the right. Forward and reverse motions are controlled by friction clutches connected to another lever. A third lever with a friction clutch operates the elevator belt.

A wheel controls the up and down adjustment of the snow plow for operating. Another lifts it to the traveling position. All are located within reach of the operator as he stands on the platform above one crawler. The machine has an overall length of 25 ft. 6 in., a plowing width of 6 ft. and a length of crawlers over all of 61 in. The maximum height of the machine is 12 ft. 4 in., and its approximate weight is 10,000 lb.

Interchangeable Brush-Holder Designed

THE number of motor failures from grounded brush-holders has been cut in two on the equipment of the Cleveland, Southwestern & Columbus Railway by the use of holders having the connection in the center instead of on the end. With the lead attached in this fashion the connection is removed about an inch further from the motor case and at the same time the holder can be used for either the right or left-hand position. The interchangeable feature has reduced by one-half the number necessary to carry in stock. The original brush-holders, having lead connections on the end nearer the motor shell, could be used, of course, only in the intended location.

Brush Holder with Center Lead Connection Makes Only One Type Necessary

The new type of holder, which is used on the Westinghouse 93, 112 and 304 motors, is made in the Elyria shops of the company from brass castings. Only a few simple machining operations are required such as smoothing up the arm and drilling and tapping for the spring and motor lead screws.

New Equipment Available

Demountable Nose for Snow Removal

A QUICK demountable snow plow nose as an accessory to the Differential Car has recently been developed by the Differential Steel Car Company of Findlay, Ohio. It is made in both single-track and double-track types. This application is in line with the company's policy of combining as many features as practicable in the Differential Car to make it a general purpose equipment and at the same time to eliminate the possibility of the equipment remaining idle under any seasonal or climatic conditions.

Snow Nose Applied to Car

The plow is readily applied to the car by making only three pin connections. It is raised or lowered by means of an air cylinder and its supports are so arranged that in raising or lowering the plow its action is similar to a pantograph in that the bottom edge of the plow remains always parallel to the track. In this way the height above the rail of the toe of the plow is the same as the height of the heel. The contour of the plates forming the plow is of unusual interest. Geometrically, it is a double warped surface and its action is similar to that of the ordinary plow share. The shape of the plow gives to the snow a rolling motion, tracing a helix, laterally and upward across the face of the snow plow.

Some of the advantages claimed for this plow are that its cost is but a very small fraction of the cost of the ordinary snow plow, and due to the three pin connection construction it can be put on or taken off with little labor and with great speed. Its use on the Differential Car gives a propelling unit of sufficient weight for snow plow duty, hence there is no deterioration of motors due to standing unused for the greater part of the year.

The Differential Car itself is very useful in hauling the snow away and is particularly valuable in large cities where removing the snow from the streets is as imperative as its removal from the tracks.

The News of the Industry

Huge Terminal Project in Chicago

Plan Evolved for Consolidating Three Terminals on Site of Old Dearborn Station

A new passenger terminal in Chicago, which would cover 50 acres and cost $55,000,000, including electrification, has been planned to take the place of the old Dearborn Street station erected forty years ago and partly burned on Dec. 21 last. The scheme covers the development of all the area from Polk to Sixteenth Streets between State and Clark Streets. The designers assert that this not only would be sufficient for all of the seven roads using the old Dearborn Street station, but also would care for the New York Central and Rock Island lines, now housed in the La Salle Street station, and the Baltimore & Ohio, Père Marquette and other roads using the Harrison Street station.

The scheme outlined is one result of the study of the terminal problem in Chicago. The Illinois Central terminal plant is another. The New York Central lines have been making another plan and the roads using the Baltimore & Ohio terminal have also been studying and investigating. Each group is attempting to ascertain what are the maximum facilities and probable costs of a joint terminal on the area of each of the three present stations. Moreover, each group is attempting to convince railroads in the other groups that they should move to new quarters. The highly encouraging feature of the terminal situation is that all the groups concerned are studying the subject.

This plan proposed by the Dearborn station group would include the opening up of Dearborn Street as a two-level traffic route to the south, and it contemplates the development of the air rights as has been done at Grand Central in New York. This would increase property values tremendously to the south of Chicago's loop.

Co-operative Plan in Buffalo

Mitten Management Formally Adopts Philadelphia Ideas of Application on International Railway

Rapid progress is being made by the International Railway, Buffalo, N. Y., in the organization and development of the new International Railway Company's Co-operative Benefit Association. R. R. Ray, formerly with the Philadelphia (Pa.) Rapid Transit Company, is secretary of the association. The collective bargaining plan has also gone into effect. Former disciplinary measures were set aside on Dec. 31, 1922.

The new association is open to all platform and other employees of the International who have been in service thirty days or more. The membership benefits include life insurance of $1,000 payable at death; sick benefits of $1.50 a day for a maximum of 100 days, and a pension of $40 a month. The dues are $1 a month. Local units of the association have been formed in Buffalo, Niagara Falls and Lockport and the employees in various departments already had elected their representatives.

Herbert G. Tulley, president of the International, says that most of the trainmen employed by the company to take the places of the men who have been on strike since July 1, 1922, have become enrolled in the new organization and there is now on foot a movement in the various departments to have 100 per cent membership.

As for the co-operative plan, a booklet has been issued describing its working under the Mitten management in Philadelphia. Under the Mitten plan in Buffalo, the basic maximum wage of 55 cents an hour has been fixed for one year from Dec. 31, 1922. Thereafter the basic maximum wage will be determined by a 50 per cent employer-employee committee with corresponding adjustments in all departments, consideration being given to cost of living and ability of company to pay. In all other respects the plan as applied to the International follows closely the lines of the plan in effect in Philadelphia.

New Texas Interurban Line Opened

Dallas-Terrell Line, Opened Jan. 14, Is 31.5 Miles Long and Cost $2,000,000—Work of Building Completed in Less than Twenty Months—Right-of-Way 100 Ft. Wide

THE Texas Interurban Railway, extending from Dallas, Tex., to Terrell, 30 miles east, was placed in operation on Jan. 14. The formal inspection tour was made on Jan. 13, when a special car bearing officials of the line, city officials of Dallas, Terrell, Mesquite and Forney, towns touched by the line, and other invited guests made a trip from Dallas to Terrell and return. Cars leave Dallas at 6.15 a.m. and Terrell at 6.45 a.m. daily and thereafter hourly until 11.15 and 10.45 p.m. One hour and twenty minutes is required for the one-way trip.

The Dallas-Terrell Interurban line represents an investment of approximately $2,000,000. The investment of this sum in an electric railway in the face of competition from buses, steam railways and automobiles is regarded as an outstanding mark of confidence in electric railway transportation.

At the time of the granting of the railway franchise in Dallas to the Dallas Railway, in 1917, the Electric Bond & Share Company, New York, and the United Electric Securities Company, Boston, joint owners of the Dallas Railway, agreed with the city of Dallas to build two interurban lines, each at least 30 miles long, from Dallas to points outside. Several extensions of time were granted on account of the war and inability to finance the lines on account of money stringency, but finally the Dallas-Terrell line was decided on as one of the two.

Construction was begun in March, 1921. A contract was previously entered into by the Texas Interurban Railway and the Texas Construction Company, under which the Texas Construction Company agreed to deliver to the newly formed interurban company a completed electric line extending from Dallas to Terrel, 31.5 miles in length, together with all equipment ready for operation. The Texas Interurban Railway is the operating company.

In the organization of the Texas Construction Company, B. R. Brown was named chief engineer. He has had entire charge of all the engineering work in the construction of the Dallas-Terrell line. Sam R. Fowler was named general superintendent of the Texas Construction Company. He has had entire charge of all the construction work. Richard Meriwether, vice-president and general manager of the Dallas Railway, was also named vice-president and general manager of the Texas Construction Company. He has been in close touch with Chief Engineer Brown in supervising the design and construction of the new line. W. R. Burns, assistant secretary and treasurer of the Texas Construction Company, has had charge of all financial matters in connection with the building of the line. H. N. Clagett, Forney, and B. H. Hart, Mesquite, were named resident engineers, the residency of Mr. Hart extending from the Dallas County line to the city of Dallas and the residency of Mr. Clagett extending from the Dallas County line to the city of Terrell. B. F. Cook, electrical engineer, has had charge of the installation of the automatic substation equipment, while the overhead construction has been under the supervision of Frank Steger, general line foreman.

The operating personnel of the Texas Interurban Railway is composed of Richard Meriwether, vice-president and general manager; J. B. Walker, secre-

tary and treasurer; M. B. Parsons, superintendent of maintenance and operation; L. W. Tate, assistant secretary and treasurer; R. L. McGregor, chief dispatcher, and Mr. Owens, dispatcher.

The Dallas-Terrell interurban passes through Mesquite, 12.1 miles east of Dallas, and Forney, 19.7 miles east of Dallas. Mesquite has a population of 800 and Forney approximately 1,500. The density of population along the line is about 1,200 to the mile.

The country between Dallas and Terrell is fairly level, and the line has been built with a maximum grade of 3 per cent. The curvature is unusually light, there being one tangent of 12 miles between Forney and Terrell and at a point between Forney and Dallas a tangent of 6 miles.

Grading was begun in March, 1921, and track laying was started in June, 1922. The line was completed in twenty months. A total of 468,000 working hours, exclusive of grading, was required in the construction of the line, a force of 300 men being employed.

Although the territory traversed by the line is prairie, a total of 424,525 cu.yd. of dirt had to be removed in the construction of the roadbed, and after grading was finished 2,500 carloads of gravel ballast, 30 cu.yd. to the car, were used. Other materials used in constructing the line aggregated 370 carloads.

There are 4,800 ft. of timber trestles and three steel span bridges on the line. The trestles consist of four treated pile bents, spaced 14 ft. center to center. Where creek beds are rock, concrete footings and 12x12 pine posts have been substituted for piling. Drainage has been well cared for, reinforced concrete pipe having been used in the construction of culverts. The right-of-way for the entire distance is 100 ft.

No expense has been spared to make the road safe in every way, and on the entire line there is but one main pipe crossing between Dallas and Terrell. An overhead crossing over the Texas & Pacific has been built just outside the city limits of Dallas at a cost of $40,000.

The track over the entire line is in double-track position, 70-lb. A.S.C.E. rail laid to standard gage, with 6-in.x 8-in.x8-ft. oak ties spaced 2 ft. centers. Specifications for the double track call for gravel ballast with at least 6 in. of gravel under the ties. The overhead construction is of the standard span type, with creosoted 35-ft. pine poles, spaced 150 ft. apart.

Five passenger and two express cars were purchased. They were built by the American Car Company. Specifications of design were submitted by the Texas Construction Company. The cars are designed for operation by one or two men. They will be operated by one man except during the rush season.

There are seventeen stations along the line, exclusive of the handsome brick stations at Dallas, Terrell, Forney and Mesquite.

Two automatic substations have been installed, this being the first time the automatic substation has been used in this part of the country.

OFFICERS OF THE TEXAS INTERURBAN RAILWAY

Top Row (from left to right)—R. L. McGregor, L. W. Tate, T. H. Owens, M. B. Parsons and W. R. Burns
Bottom Row (from left to right)—Sam R. Fowler, Richard Merlweather and B. R. Brown

Electrification of Temiskaming & Northern Recommended

A report recommending the electrification of the Temiskaming & Northern Ontario Railway, which was prepared by S. B. Clement, chief engineer, and J. G. G. Kerry, consulting engineer, of the company, is now being considered by the Railway Commission and Premier Drury of the province of Ontario. The committee said:

We recommend electrification of the main line from North Bay to Cochrane (253.3 miles), and of the Iroquois Falls sub-division (7 miles) and Porcupine sub-division (33.1 miles), as providing a sound and self-supporting investment for the capital funds of the province in a further development and upbuilding of Northern Ontario. We recommend that the commission take immediate steps to secure title and control of water powers on the Amable du Fond, Blanch and Frederick-House Rivers.

We recommend that after title to these water powers has been secured, opportunities should be given to the companies operating power plants in the district to tender on the supply of electric power for the commission.

In discussing the report, Chairman Lee said:

The margin is so close between the cost of the present operations and that which would occur under electrification that there is some hesitation in proceeding immediately with the scheme. Its success will depend altogether on the volume of future traffic. The estimated cost of electrifying the line to give it a capacity to handle the expected 1925 traffic, calculated at 25 per cent greater than that handled in 1921, is $11,214,778.

The Temiskaming & Northern Ontario Commission, in presenting the report to the Ontario Government, recommended that electrification be postponed for the present, and was authorized by the Government to continue its investigations in the matter.

Toronto Spending Lavishly on Its Municipal Road

Under municipal ownership the city of Toronto, Ont., will have a local transportation service probably second to none anywhere in the world for a city of its size. It is a thorough job that the Toronto Transportation Commission is doing in re-building the lines of the Toronto Railway, but the costs are piling up. Even the Toronto *Globe*, a strong advocate of the idea of city ownership, has shown concern about the matter lately. The *Globe* expresses alarm at the expenditure of another couple of millions on carhouses. That paper continues:

Already sums totalling almost $25,000,000 have been spent on reconstruction. The arbitrators who will determine the value of the system when taken over in September, 1921, have not yet given their award, but it is not likely to be less than $10,000,000. The city's share of the cost of arbitration will be little short of a million. The civic car lines, built before 1921 and now incorporated in the Transporation Commission's system, cost $2,750,000 and interest and sinking fund on them must now be met from street car fares. The total expenditure on which interest must be paid will be more than $40,000,000 when payment is made for the old Toronto Railway and the shops now contracted for are completed.

In the civic estimates of 1922 the amount required for interest and sinking fund charges on the then street railway capital investment of $29,481,000 was $1,835,000. On $40,000,000 it will be, roughly, $2,500,000 a year. The annual charges of the Toronto Railway before the stock ceased to pay dividends were slightly under $1,200,000. The capital charges of the reconstructed road will be more than double those of the Toronto Railway.

Service-at-Cost in Milwaukee

Service-at-cost operation of the electric light and street-railway public utility properties of the Milwaukee Electric Railway & Light Company in Milwaukee and the ultimate purchase of the property by the city are provided for in a contract which the public utilities committee expects to present to the City Council within the next two weeks, according to Fred S. Hunt, chairman of the committee. The contract must be ratified by the Council and authorized by a state law. Then the voters of the city must accept it. The value of the electric light and street railway properties will be fixed and the rate of return to the company agreed upon. The rates to be charged by the company will be fixed by the city, subject to appeal to the State Railroad Commission. Surplus revenues beyond the rate agreed upon will belong to the city.

Newburgh Prepares for Complete Bus Operation

The Orange County Traction Company, Newburgh, N. Y., is preparing to get rid of its electric railway system and to supplant the entire line with buses. This change from railway to bus operation dates back to the fall of 1922 when the company replaced its crosstown railway lines with motor buses and organized a subsidiary, the Newburgh Public Service Corporation, to conduct its bus business. This company has since been granted a franchise by the Council to operate buses over the company's 6-mile route from Newburgh to Orange Lake which passes through one of Newburgh's suburban residential districts. A similar petition is now before the Public Service Commission. The latest development is the plan to turn its main city line over to the bus corporation, effective on May 1, 1923.

The fact that the crosstown bus lines carried more passengers than the trolley lines coupled with the fact that the cost of operation was about 37 per cent cheaper influenced the railway in reaching this decision.

Shore Line Bought—Operation Planned

A. William Sperry of the Sperry Engineering Company and a prominent engineer of New Haven, Conn., is negotiating to purchase from the Shore Line Electric Railway the portion of the line on the east shore road from New Haven, Conn., to Saybrook, Conn. He plans to issue bonds of $400,000 shortly, the necessary amount estimated to put the line in operation. It has not been used since 1919. Mr. Sperry was one of the builders of the road back in 1907. He stated that the power would be furnished by the Connecticut Company and that arrangements were to be made so that cars of one company could operate over the other's tracks. Mr. Sperry also stated that one-man type of cars would be used when the line was put in operation.

Mr. Sperry is confident that under the latest developed methods of electric railway operation the road can be run successfully. He is reported to have said:

Since the shutting down of the road in July, 1919, several parties have negotiated for the purchase, but for various reasons were not successful in financing and putting the proposition together.

It is proposed to re-equip the road with light-weight, double-truck, one-man, safety cars, seating forty-four people, abandon the power house and purchase power in New Haven and build new substations in North Branford and Clinton.

Among the many advantages that the new company will have over the old company are the very small capitalization, the light-weight cars with small cost of operation, the low cost of power, the great reduction in labor devices and the one-man safety cars, the reduction in the cost of highway maintenance and taxes due to state legislation, development in the several towns since the road shut down and the establishing of the large State Park at Hammonasset Beach, Madison. If the economies can be made that appear possible, the Shore Line should prove a profitable venture.

City Administration Proceeds with Rapid Transit Plan

Despite the hostile attitude of City Council and prospects of blocking plans for high-speed transit lines under existing law, Mayor Moore of Philadelphia, and the city administration proceeded on Jan. 23 with plans to advertise for bids for the Broad Street subway by March 1.

Mayor Moore declared many letters have been received by him indorsing his attitude for a return of the 5-cent fare. While these communications were being received, the Philadelphia Rapid Transit paved the way for speeding up the hearings on its property valuation case before the members of the Public Service Commission.

The Mayor issued the following statement:

Director Twining and the Mayor were in conference this morning concerning high-speed transit lines. The Mayor has asked the director for answers to certain specific inquiries and they are being prepared. They are expected to advise the public fully as to work on the Broad Street subway and the comprehensive plans. One of the subjects under discussion had to do with the suggested loop or extension of the Broad Street subway east on Ridge Avenue to Spring Garden, thence to Seventh Street, south on Seventh Street to Christian and west to Broad.

This is Director Twining's suggestion to relieve the fierce congestion contemplated by any right angle eastern extension from Broad Street to City Hall. The Mayor is inclined to agree with the director that the Ridge Avenue-Seventh Street loop would satisfy all interested and would accommodate the greater number of people employed east of City Hall who want to make connections north and south.

This proposed loop extension was under discussion between Director Twining and the engineers of the Philadelphia Rapid Transit Company, and was partially agreed to by Mr. Mitten's engineers before the president of the Philadelphia Rapid Transit Company broke off negotiations. The Mayor said he had no doubt this eastern extension would be brought to the attention of the Council, and when his own inquiries of the director were answered the comprehensive plan, including the Broad Street subway itself, would be better understood.

Appeals to Interstate Commerce Commission

The Supreme Court of the State of California has refused to grant a rehearing to the California Railroad Commission in the matter of the latter body's recent order for constructing a joint union passenger terminal for the steam roads and interurban railway lines entering Los Angeles. The Supreme Court on Dec. 19 annulled the order saying that the commission had exceeded its jurisdiction in ordering the project.

When the court set aside the board's order, the commission announced its intention to appeal for a rehearing. This being refused, the commission, through its chief engineer, Richard Sachse, has now appealed its case to the Interstate Commerce Commission, the commission's chief engineer also appearing in behalf of the city attorney of Los Angeles. The matter has been reviewed in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 30, 1922 and Jan. 6, 1923.

On Jan. 23, 1923, the Municipal League of Los Angeles, in suggesting that the proposed union railroad terminal in Los Angeles be constructed at the intersection of Sixth Street and the

Los Angeles River instead of at the Plaza Terminal, forwarded to the Interstate Commerce Commission an appeal that an investigation of the situation more far reaching than that of the State Railroad Commission be made.

In the brief forwarded it was suggested that a unification of all terminal facilities, excepting freight depots, including main tracks and spurs from the entrance of the city of Los Angeles to the harbor of Los Angeles be considered. Such an investigation as proposed would cover the entire holdings of the railroads involved in the matter. The proposed site suggested by the Municipal League is owned by the Union Pacific.

With acceptance of this site as a terminal, the league pointed out, unreasonable construction and operation expenses would be curtailed, saving the three transcontinental lines involved huge sums that could be devoted to improvements. In supporting the pleas for the Sixth Street site, the league cited specific undesirable features of the terminal recommendations as made by the State Railroad Commission.

New Bus Proposal in Saginaw

For the first time since the suspension of service on Aug. 10, 1921, by the Saginaw-Bay City Railway the citizens of Saginaw will express their choice March 7 on a definite motor bus proposal for a city wide operation. On that date a franchise will be submitted granting to the Saginaw Motor Omnibus Company, the right to do business. A week ago a franchise was presented to the Council, but on Jan. 27 all action was rescinded, and a new measure approved and ordered submitted. The salient points of the measure are:

Term of grant, ten years.

Streets that will be served are named and cover present routes of the Saginaw United Transit Company, the outgrowth of the jitney buses with some additions. The routes will be determined after a traffic survey has been made by the grantees' engineers.

Council may order additional routes, but if there is a dispute between the city and operating company, it is to be settled by arbitration, each party to choose one, and if the two cannot agree, they are to select the third and the decision of the three is to be final.

All reasonable rules and regulations for the safety, welfare and accommodation of the public are to be made by the city.

All competition is to be prevented by legislative acts of the City Council.

All vehicles are to be of at least twenty-five passenger seating capacity and to be wide tread.

Rate of fare, 6-cent cash fare, eight school tickets 25 cents; universal transfers; firemen and policemen to be carried free. Council may compel company to issue ticket strips for the convenience of the public. The company reserves the right to charge a 5-cent fare to endeavor to increase the revenue passengers and may return to the 6-cent fare at its discretion.

City may purchase the property of the company on fifteen days' notice in writing, value to be fixed by arbitration. The value of the franchise is not to be considered.

The grantees are Leonard A. Henning, Saginaw, and John Wade, Atlantic City, N. J. They can not transfer or dispose of the franchise until a company is organized under Michigan laws, of at least $500,000 capitalization, $100,000 of which must be paid in, in cash, and orders placed for not less than forty buses. In addition to the grantees there are associated in the enterprise, Samuel Bogert and Walter Kutzleb, New York.

Want Road Restored to Owners

The railroads committee of the general Assembly will soon introduce a resolution which, if passed would place the Connecticut Legislature on record as favoring the return of the Connecticut Company to its owners and the discharge of the federal trustees, who are now in charge of the road. By federal decree of some years ago, dividing up the New Haven Road property, the Connecticut Company's affairs have been administered by five trustees, whose total yearly salary is about $35,000.

The road is under jurisdiction of the Interstate Commerce Commission and the General Assembly has no power over it as far as changing its present status is concerned. It is, however, the sentiment of the committee on railroads that some steps should be taken to restore the road to its owners, and a bill to this end will be introduced.

Committee Formed to Promote Better Relations

The Washington Committee on Public Information, with E. H. Thomas, formerly a newspaper man, as director, and offices in the Henry Building, Seattle, has been formed by the power, light, electric railway and a part of the gas utilities of the state. The director said that the purpose was to promote better relations between utility companies and their customers by bringing about a more complete understanding of its business by the general public and a more complete understanding of the general public by the men who conduct this great business. In part he said:

Our committee exists to furnish accurate information and facts about our business to any citizen or group of citizens. We will prepare and send out weekly information about the various phases of our industry.

We do this in the belief that our business, which touches so intimately the domestic, social, commercial and industrial life of the people, is a matter of concern to the public.

In addition, we desire to offer the services of the committee as a bureau of general information on matters pertaining to the public utility business.

News Notes

Crash Demolishes Cars.—More than two score passengers were injured recently on the Buffalo-Niagara Falls high-speed line of the International Railway, Buffalo, N. Y., when a two-car train crashed into an electric locomotive near the Niagara Falls city line. The two cars were practically demolished.

Will Start New Department.—The city of Houston will establish a public utility department within sixty days with a complete staff to handle matters pertaining to the gas, electric light and electric railway companies. The expense of this new department by agreement will be borne by the public service corporations and the city.

Beacon Appears Every Month.—The Elmira Water, Light & Railroad Company, Elmira, N. Y., started some time ago the publication of a monthly entitled *Water-Light Beacon.* The pamphlet is issued in the interests of the Water-Light Employees' Association and devoted to the purpose of increasing co-operation between the customers and employees.

Fire Destroys Building.—The three-story building occupied by the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., was almost totally destroyed and wrecked by a fire recently. Several adjoining buildings also were badly damaged. The loss to the railway was approximately $75,000. Two firemen were injured.

Contract Signed.—The 1923 contract between Division 732 of the Amalgamated Association and the Georgia Railway & Power Company, Atlanta, Ga., was signed recently by P. S. Arkwright, president of the company, and B. E. Cook, president, and W. A. Skelton, recording secretary, of the local union. No significant changes were made in the contract.

Electrification Recommended.—In his annual report to the City Council R. C. Turner, city electrician of Atlanta, Ga., has recommended the electrification of all railroads operating within Atlanta's city limits. Mr. Turner believes that all railroads entering Atlanta should be compelled to abandon their steam engines at the city limits and enter under electric power.

Ontario Properties Disagree. — The managements of the Port Arthur and Fort William Railways in Ontario are disagreeing over more frequent service in Fort William and also a higher wage scale for the employees. Port Arthur has not agreed to the arrangement and Mayor Edmeston of Fort William has threatened to dissolve the joint agreement so that two systems shall be run separately. The cars of either city now run through the other.

Bill Requires Full Crews.—A bill introduced by Mr. Higgins in the Senate on Jan. 26 at Albany would require full crews of uniformed guards for subway and elevated trains, of at least one guard to the car. However, the employment of one uniformed guard to operate the entrance and exit doors or gates of not more than two connected cars will be allowed on any subway or elevated passenger road made up wholly of cars having non-automatic and unlocked swinging or sliding doors at either end to permit free movement of passengers from car to car.

Employees Will Have Annual Dinner.—Veteran employees of the Twin City Lines, Minneapolis, Minn., will have their association annual dinner Feb. 3 in the dining hall at the Snelling station in St. Paul. Most of the twenty-three men who entered the service of the company in the 80's are expected to attend. Horace Lowry, president of the company, will return from the south in time to make an address. About 325 men who have been in the service twenty years or more have been invited by F. A. Anderson, social service director. Vice-president T. Julian McGill will give a talk.

Financial and Corporate

Reorganization Outline

Ohio Roads Will Be Continued in Service —Drastic Changes Proposed in Financial Structure

A plan has been worked out for the reorganization of the Columbus, Newark & Zanesville Electric Railway and the Columbus, Buckeye Lake & Newark Traction Company which provides for continuing both of these properties in regular operation. It also contemplates the payment of the general creditors in full. So far as the security holders are concerned, no provision is made in the plan for any holder of any of the bonds who does not deposit under the respective deposit agreements and assent to the plan and pay his assessment, nor is any provision made for any common or preferred stockholder of either company except such preferred stockholders as may purchase the right to subscribe to the securities of the new company.

Under the plan as now proposed, the successor company will be known as the Columbus & Zanesville Power & Railway Company. With respect to the details of the exchange of the various securities, this is of particular interest only to the holders of them. In this connection, however, it is of interest to note that Day & Zimmermann have submitted an estimate of earnings for the years ended Sept. 30, 1923, 1924 and 1925, with the new securities taken into consideration, which shows a balance of $12,600 available for car trust rentals, amortization, depreciation, federal taxes and dividends for the 1923 year, a balance of $209,900 for the 1924 year, and a balance of $263,700 for the 1925 year.

The reorganization committee points out that the railway lines of the Columbus, Buckeye Lake & Newark Traction Company and the Columbus, Newark & Zanesville Electric Railway constitute a single operating entity. The interurban line connecting Columbus, Newark and Zanesville is a through route, with a large volume of traffic passing between the sections upon which the Buckeye mortgage and the first mortgage are respectively a first lien. The disruption of this through route would largely destroy the earning power of both sections. The first mortgage is a first lien on about 80 per cent of the mileage of the Newark city line, the Buckeye mortgage being a first lien on the balance. A large part of the power used by the light and power property in Zanesville is generated in the Hebron plant, upon which the Buckeye mortgage also is a first lien. On the other hand, substantial and valuable portions of the railway system were constructed out of the proceeds of the general mortgage bonds.

It is pointed out that under such circumstances the segregation of the property according to mortgage liens is impracticable, because it would destroy the earning power of the property and greatly increase the expenses of operation through the multiplication of overhead expenses incident to a number of separate operating organizations. A very substantial equity in earning power, both present and potential, in the Zanesville Light & Power property accrues to the first mortgage (constituting a second lien thereon) and to the general mortgage (which has a third lien thereon). The committee says that the successful reorganization must be predicated upon the retention of the equity in this earning power and the physical property from which it accrues.

An interesting part of the plan is that the reorganization managers will cause the common stock of the new company to the amount of $2,670,000 to be deposited in a voting trust for a period of ten years.

The Columbus, Newark & Zanesville Electric Railway was incorporated on July 2, 1902, in Ohio. On April 1, 1904, it purchased the property and franchises of the Newark & Granville Street Railway. On June 1, 1906, it purchased the property and franchises of the Columbus, Buckeye Lake & Newark Traction Company, subject to the $1,243,000 bond issued in 1901 still outstanding. On June 1, 1906, the property and franchises of the Zanesville Railway, Light & Power Company were also purchased. At the time of this acquisition the property was subject to a mortgage on the electric railway, of which $270,000 was outstanding, due Feb. 1, 1919, extended to Feb. 1, 1924, at 7 per cent. At the present time the bonds have been refunded to the amount of $247,000, leaving still outstanding $3,000. On June 23, 1906, the property and franchises of the company were leased to the Indiana, Columbus & Eastern Traction Company. On Aug. 1, 1907, this lease was assigned to the Ohio Electric Railway. The Indiana, Columbus & Eastern Traction Company and the Ohio Electric Railway became insolvent in 1921, and the leases previously mentioned were terminated.

$1,545,055 Net for Boston Elevated

Reduction in Basic Ten-Cent Fare Awaits Payment of Loans to Cities and Towns and Passage of Legislation to Remove Burdens Unjust to Car Rider—Public Trustees Hopeful for Future

THE fourth calendar year of public operation of the Boston (Mass.) Elevated Railway shows a balance remaining after providing for all costs of service of $1,545,055 after making allowance for delayed charges and credits. In July the trustees having restored the reserve fund to $1,000,000, as required by law, paid $517,196 to the cities and towns on account of their loan to meet the deficit of the first year of public operation. The unpaid balance of that loan is now $3,462,955. A substantial surplus is expected to be available next July for the second payment to these cities and towns, but the trustees report that the probable amount cannot be definitely stated in view of the well-known sensitiveness of railway costs to climatic conditions and market fluctuations in the commodities which are used. The succession of storms during the past six weeks has already cost more than $200,000. Change of a dollar in price of a ton of coal makes a difference of $275,000 in operating expense for the year.

While the trustees were engaged in the financial struggle against operating losses and for restoration of the credit of the railway the public was patient with them, but no sooner did it become known that the road had reached a self-supporting basis than demands began to pour in on them. The taxpaying public urged the prompt reimbursement of their loan of 1919. The riding public appealed for lower fares. An equally large traveling public, less interested in fares than in service, urged larger accommodation. Restricted in law and still limited in revenue the trustees endeavored to meet in part each of these public needs. A large payment was made into municipal treasuries in reimbursement of loan. The 5-cent fare

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR YEAR ENDED DEC. 31

	1922	1921	1920	1919	1918
Total receipts	$32,699,176	$33,277,025	$34,031,636	$29,498,582	$21,062,692
Operating expenses:					
Wages	14,772,340	15,563,255	17,216,445	15,539,105	11,007,362
Material and supplies	2,903,650	3,093,934	3,310,858	3,640,065	3,248,317
Injuries and damages	555,355	518,249	640,165	701,907	792,783
Depreciation	2,004,000	2,004,000	2,004,000	2,004,000	1,184,670
Fuel	1,853,111	1,663,617	2,587,652	1,815,260	1,762,963
Total operating expenses	$22,088,458	$22,843,056	$25,769,122	$23,700,339	$17,996,097
Taxes	1,587,186	1,546,758	1,142,987	1,045,502	917,515
Rent of leased roads (Including Dividend Rental under Chap. 159, Acts of 1918)	3,727,859	4,203,061	4,102,230	4,002,656	3,233,546
Subway and tunnel rents	1,927,150	1,963,737	1,790,432	1,516,047	1,235,974
Interest on borrowed money	1,891,315	1,494,258	1,514,963	1,555,790	1,302,157
Miscellaneous items	65,016	54,707	59,067	60,346	22,343
Total cost of service	$31,286,987	$32,105,580	$34,378,803	$31,880,682	$24,707,633
Loss for year	.....	.....	$347,167	$2,382,099	$3,644,941
Gain for year	$1,412,189	$1,171,444	.....	.....	.....

has been extended from time to time under the plan adopted for its development. The trustees point out, however, that while the 5-cent fare should completely cover transportation between community centers the 5-cent fare cannot now nor in the future become a general substitute for or an active competitor with the higher basic fare whether that be as at present 10 cents or, as it may be later, a lower charge. No substantial invasion of net revenue can be allowed until cities and towns have been reimbursed nor wherever such invasion would unreasonably postpone reduction in the higher fare. To meet the request for larger accommodation additional beneficial changes have been made in operation.

The accompanying comparative table presents a summary of receipts and expenditures for the past and preceding years.

During the year, with a view to more efficient service, additions were made to rolling stock. Thirty-six new steel cars have been placed in commission in the elevated service. Additional flat cars and snow sweepers have been purchased. In April 100 semi-convertible cars of the most modern type were ordered and seventy-one of them are now in use. These cars may be operated by either one man or by two men. Recently 100 more of this type of cars have been ordered for early delivery. For train service in the East Boston Tunnel forty steel cars have been ordered.

During the year approximately 21 miles of track were rebuilt and 7½ miles improved by substantial repairs. The new elevated car repair shop at Forest Hills is about completed and ready for use. The first unit of the new store house at George Street in Charlestown for the use of the maintenance department is nearly complete and construction of the second unit is under way.

TRAFFIC

The accompanying tables show that 19,341,862 more revenue passengers were carried in 1922 than in 1921 and that the total of 356,593,942 is the largest number carried in any year of public operation. This is ascribed by the trustees in part to the general awakening of business activities and in part to the extension of 5-cent fare routes. The increase of 868,391 in car mileage and of 285,947 round trips in comparison with the record of the preceding year indicates the increase in the service.

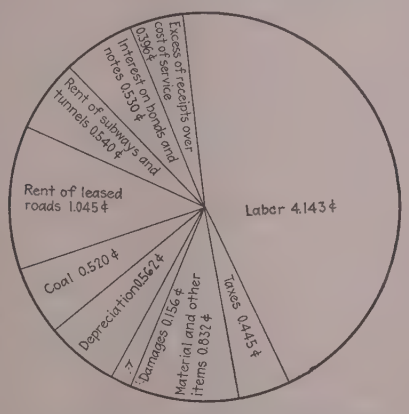
The trustees believe that where there is no compelling need of the most drastic economy the general substitution of the one-man car is not desirable. They are convinced, however, that the one-man car has its proper place on the Boston Elevated Railway, as proper as that of the train or the individual two-man car or the motor omnibus; that its use means more frequent service and often makes possible the development of the 5-cent fare. They do not agree that it is suited to conditions of heavy traffic for the reason that its use is then apt to annoy passengers in boarding the car and to interrupt schedules, causing delays that interfere with convenient and efficient service.

COMPARATIVE PASSENGER STATISTICS
REVENUE PASSENGERS CARRIED

Year	Weekday Average	Saturday Average	Sunday Average	Holiday Average	Total for Year
1922	1,030,303	1,144,320	617,148	691,890	356,593,942
1921	975,745	1,068,295	578,860	696,691	337,252,080
1920	960,737	1,072,319	591,063	703,634	335,526,561
1919	934,918	1,078,635	596,182	706,429	324,758,685
1918	985,384	1,147,809	658,902	775,634	348,664,700
1917	1,073,943	1,249,588	728,847	857,902	381,017,338
1916	1,050,038	1,218,749	718,804	832,962	373,577,908
1915	992,283	1,140,046	685,726	846,860	352,469,586

TRAFFIC STATISTICS—YEAR ENDED DEC. 31

	1922	1921	1920	1919
Round trips operated	6,059,531	5,773,584	5,764,347	6,578,069
Passenger revenue	$31,834,022.77	$32,253,629.59	$33,108,946.48	$28,767,544.11
Passenger revenue per car-mile (cents)	62.94	64.89	64.62	53.74
Passenger revenue per car-hour	$7.09	7.36	7.16	6.06
Passenger revenue mileage	50,575,088	49,706,697	51,237,527	53,533,522
Passenger revenue car-hours	4,487,400	4,381,815	4,627,295	4,749,318
Revenue passengers carried	356,593,942	337,252,080	335,526,561	324,758,685
Revenue passengers carried per car-mile	7.051	6.785	6.548	6.066
Revenue passengers carried per car-hour	79.47	76.97	72.51	68.38


Excess of receipts over cost of service 0.306¢
Interest on bonds and notes 0.530¢
Rent of subways and tunnels 0.540¢
Rent of leased roads 1.045¢
Labor 4.143¢
Coal 0.520¢
Depreciation 0.562¢
Damages 0.156¢
Material and other items 0.832¢
Taxes 0.445¢

Allocation of receipts per passenger

Twelve Months Ended Dec. 31, 1922. Average Receipts per Revenue Passenger 9.169c.

One of the most important railway measures before the Legislature last winter proposed the extension of the rapid transit facilities from Andrew Square to Fields Corner in connection with the purchase or taking of the Shawmut Branch of the New York, New Haven & Hartford Railroad. A bill to carry out this plan based upon the previous study and recommendation of the Department of Public Utilities is before the present Legislature. The trustees favor this project as the only one that will effectually relieve the congestion at Andrew Square.

On June 10, 1921 the railway property of the West End Street Railway, which had been operated since October, 1897, by the Boston Elevated, under lease from the West End, was consolidated with the railway property of the Boston Elevated under the provision of chapter 740 of the Acts of 1911. The consolidation was effected as provided in the statute by an exchange of the outstanding preferred and common stock of the West End at par for an equal amount at par of first preferred and second preferred stock of the Boston Elevated.

At a hearing before the Department of Public Utilities in September the trustees submitted an outline sketch of possible extensions of service. The plan was suggestive only, was not elaborate in detail, and did not reflect the conclusions of engineering experts. It served its purpose, however, in calling attention to the present need of some comprehensive and harmonious plan to which individual extensions of the Boston Elevated Railway should hereafter conform. One feature of the sketch proposes an independent trunk subway in Huntington Avenue which would provide a future extension to the north of Boston. This would bring additional rapid transit where the need is imperative. It would also provide a permanent improvement in place of makeshift changes at Park Street, making the station there less of a terminal

STATEMENT OF SPECIAL TRUST FUND, DEC. 31, 1922.

BOSTON ELEVATED RAILWAY TRUSTEE

Principal of trust fund as established	$1,500,000
Accretions and accumulations of income to June 10, 1922	707,342
Total special trust fund	$2,207,342
Income from June 10, 1922, to Dec. 31, 1922	20,112
Investmen in marketable securities and real estate	$2,207,242
Cash on deposit	20,212

BOSTON ELEVATED RAILWAY POWER STATISTICS

	1922	1921	1920	1919	1918	1917	1916
Tons of coal burned	273,441	215,870	258,087	287,670	281,677	270,452	254,735
Pounds of coal per kilowatt-hour	2.553	2.714	2.353	2.835	2.772	2.309	2.256
Average price of coal per ton	$6.777	$7.71	$10.07	$5.91	$6.26	$4.19	$5.35
Net cost of power for car service per kilowatt-hour (cents)	1.414	1.172	1.921	1.307	1.158	.620	.534
Net cost of power per total revenue car-mile (cents)	6.153	4.815	8.538	5.439	4.668	2.573	2.137
D. C. annual output (kilowatt-hours)	239,905,874	222,461,060	245,676,503	239,892,118	227,582,057	262,343,882	252,896,235
D. C. maximum hour output (kilowatt-hours)	78.755	75.905	72.295	71.700	67.965	79.535	75.380

station and a more adequate way station. Another feature of the sketch proposes an extension of rapid transit to the north of Boston through use of the Saugus branch of the Boston & Maine Railroad in connection with the elevated line that now has a temporary terminal in Everett.

In this connection the trustees say that the Metropolitan Planning Board advocated by the Boston Chamber of Commerce and recommended by the Department of Public Utilities could achieve much for the public welfare in the study and determination of the proper methods for the development of railway transportation.

The trust fund is held by the Boston Elevated Railway under Chapter 740, Acts of 1911—"An Act to authorize the consolidation of properties and franchises of the Boston Elevated Railway and the West End Street Railway"—and represents the proceeds from the sale to the Boston Elevated Railway of real estate of the West End Street Railway which was not required in the conduct of the business. The amount so received ($1,500,000) was held by the Boston Elevated Railway and invested by it and allowed to accumulate until June 10, 1922. Hereafter the annual income therefrom will be applied toward the purchase and retirement of the second preferred stock of the Boston Elevated Railway. No part of this fund or its income can be used for any other purpose.

Community Enterprise Makes Money

At the annual meeting of the Tygarts Valley Traction Company, Grafton, W. Va., General Manager Alexander read a report showing the earnings of the company from operation for the year were $47,404; total expense $37,196 and net earnings $10,208. There was deducted from these earnings the sum of $4,126, including taxes and interest on the funded debt, which left a net profit of $6,083.

The company is a community enterprise, having been taken over by a public subscription campaign after the road had been in financial difficulties and was ready to suspend operations. Improvements needed were listed as a rotary converter for substation, more steel ties with which to complete Main Street track and the rebuilding of Doresey Street bridge, in all an expenditure of about $20,650.

Investment Company Organized

The Puget Sound Power & Light Company is seeking a broader market for its securities. As a step in this direction A. W. Leonard, president, and W. H. McGrath, vice-president, have incorporated the Puget Sound Power & Light Securities Company, with a capital stock of $50,000, to handle the common, preferred and prior preference stock of the parent company in the Pacific Northwest territory. The power company has been very successful in selling to its customers, employees and general public its preferred stock and prior preference preferred, in the last two years, having sold more than $3,000,000 of its securities in the Northwest. Officers of the new Securities Company are: A. W. Leonard, president; W. H. McGrath, vice-president; James B. Howe, secretary; F. W. Brownell, treasurer; Frank Dabney, manager.

$6.16 on Common Stock—1923 a Promising Year

For the year ended Dec. 31, 1922, the Twin City Rapid Transit Company, Minneapolis, Minn., and subsidiary companies realized a net income of $1,565,201 after charges and taxes. This is equivalent after deduction of preferred dividends to $6.16 a share earned on the $22,000,000 common stock. The net income for the previous year was $697,304 or $2.21 a share on the common stock. The income account for the year just ended is compared in the accompanying table with the previous year.

STATEMENT OF EARNINGS OF TWIN CITY LINES

	1922	1921
Gross revenue....	$13,772,647	$13,865,581
Net after tax.....	2,606,398	1,735,409
Other income	69,241	55,732
Total income...	$2,675,639	$1,791,141
Interest, etc.	1,110,438	1,093,837
Net income	$1,565,201	$697,304
Prefered dividends	210,000	210,000
Common dividends	880,000	440,000
Surplus	$475,201	$47,304

In his remarks to the stockholders President Horace Lowry referred to the valuation of the property, saying that the companies had completed their own valuations and were ready to submit their case as soon as the State Railroad & Warehouse Commission fixed the date. He said in part:

> Determination of the fair value of the properties is of first importance to both the public and the operating companies, but pending such determination we have explained to the cities the impossibility of spending for extensions, betterments and renewals any sum in excess of the amount charged to operation for depreciation.
>
> It has been made clear to the authorities of the two cities that the companies are trying to accomplish as much as possible with the funds available from this source, but that such funds so used for capital additions must be repaid to the depreciation reserve when the commission shall have finally fixed the value of the properties and authorized the financing necessary to refund outstanding bonds and provide for additional capital expenditures and future betterments.
>
> Your management believes the public has a better knowledge of street railway affairs now than in 1921. This is an important development and should help to bring about better public relations, continued good service, and a reasonable return to the stockholders on fair value of their property.

February Maturities Nearly $18,000,000

Electric railway maturities which fell due on Feb. 1 amounted to approximately $18,000,000. The largest item was the Brooklyn Rapid Transit Company's 6 per cent receivers' certificates of $14,000,000. Other items included the $1,400,000 Consolidated 5s of the Cleveland & Southwestern Traction Company and $565,000 of the Canton-New Philadelphia Railway's first 5s.

Seeks Authority for $7,192,000 Issue

The Interstate Public Service Company of Indianapolis has filed a petition with the Public Service Commission asking for authority to issue $7,192,000 of 6 per cent twenty-five-year first and refunding gold mortgage bonds to be used to retire $4,048,000 of bonds issued by the company and outstanding and to retire $3,144,000 of outstanding bonds of underlying issues on properties bought by the Interstate company. The petition asks for authority to sell the new issue at not less than 89. It is proposed to date the bonds Feb. 1, 1923, and to secure them with a mortgage on all the property of the company. The Public Service Commission issued an order Dec. 22 of last year granting a petition filed a month previous permitting the Interstate to purchase a number of properties.

Pays Rent for Using Viaduct

The Kansas City (Mo.) Railways, through its attorney, Judge James E. Goodrich, has just paid to John B. Pew a check for $34,776 for rent on the Intercity viaduct from Sept. 9, 1920, to July 1, 1922. This is the first money paid by the company to the city for the rental of the viaduct since the cars began to cross the structure in May, 1919. Judge Kimbrough Stone of the Federal court made a recent ruling which gave Kansas City, Kan., and Kansas City, Mo., $30,000 a year for the use of the viaduct by the railway. Kansas City, Kan., will receive 44 per cent and Kansas City, Mo., 56 per cent.

1923 Earnings to Be Used in Muskegon

Alanson L. Lathrop, New York, president of the American Light & Traction Company, made an unusual promise to the directors of the Muskegon Traction & Lighting Company, Muskegon, Mich., at the annual meeting recently. Mr. Lathrop told the directors that not one cent of the earnings of the company would be taken out of Muskegon during 1923. This applies both to the railway and gas services.

It is expected that the earnings of the company will be about $100,000. Plans are being made for the purchase of five cars to be put into service during the next six months, while extensions and improvement in service will also be effected as rapidly as possible.

Mr. Lathrop expressed himself as being pleased with the treatment afforded the company by Muskegon and Muskegon Heights, the two cities served. He also said that the company should not expect a return on its investment until the property had been improved.

"Many people believe we have the cars to accommodate them during the rush hours, but keep them in the carhouse," said George Steinwedel, president. "We believe the people should know that all available cars are in operation, and that we are doing all possible to give service."

Interborough Has Good Quarter

Net earnings of the Interborough Rapid Transit Company, New York, for December, made public on Jan. 30 amounted to $494,247 after allowing for interest on bonds, leaving a balance of $344,247 after the deduction of the dividend on the Manhattan Railway stock under the plan of financial readjustment now in effect. For the last quarter of 1922 earnings ran well ahead of the requirement for the Manhattan dividend, now at the rate of 3 per cent. $9,536,070 have been taken into account. This $9,536,070 is the amount the subway has failed to earn up to the present time before the city participates in any profits. For the quarter, earnings fell below the preferential requirement, so that payments to the city are farther away than ever.

Colonel Murphy explained that the figures were not in comparative form because the financial readjustment made it impossible except for the items of gross and net. The gross for the three months ended Dec. 31, 1921, was $14,140,048, while the net was a deficit of $194,603, making the showing for the last quarter of 1922 $411,158 better than that for the last quarter of 1921.

STATEMENT OF NET EARNINGS OF THE INTERBOROUGH SYSTEM UNDER THE READJUSTMENT PLAN

	Month Dec. 1922	Three Months Ended Dec. 31, 1922
Total revenues	$4,959,770	$14,539,959
Operating expenses, taxes and rentals paid city for the old subway	3,402,783	10,158,490
Income available for all purposes	$1,556,986	$4,381,468
Fixed charges:		
Interest on I. R. T. 1st mortgage 5% bonds	$669,203	$2,007,611
Interest on Manhattan Railway bonds	150,686	452,060
(A) Interest on I. R. T. 7% secured notes	190,908	573,747
	$1,010,799	$3,033,418
	$546,187	$1,348,050
(B) Interest on I. R. T. 6% ten-year notes	968	968
Miscellaneous income deductions	50,971	150,630
	$51,939	$151,599
Earnings without deducting the sinking fund on the Interborough Rapid Transit first mortgage 5% bonds ($176,758 for the month of December and $529,895 for the quarter), which, under the plan, does not become operative until July 1, 1926, but which must be deducted from earnings of the system before arriving at the sum available for dividends on Manhattan stock	$494,247	$1,196,450
Dividend on $60,000,000 Manhattan stock at 3% annual rate	150,000	450,000
Balance	$344,247	$746,450

RECONCILIATION WITH REPORT TO TRANSIT COMMISSION

	Month Dec. 1922	Three Months Ended Dec. 31, 1922
Net corporate income as reported to Transit Commission	$167,489	$216,555
Deferred sinking fund (accrued but not paid)	176,758	529,895
Equals above balance	$344,247	$746,45

NOTES: (A) When the plan was consummated it became operative generally as of July 1, 1922. However, as to both note issues the changes in fixed charges intended to be brought about by the readjustment were not effected until almost the close of the year. For both the month and the quarter ended Dec. 31, 1922, the interest on the 7% secured notes, shown above, is calculated on the portion of the entire $38,144,400 of three-year notes of 1918 chargeable to operation, rather than on $34,330,000 of new ten-year notes. Consequently in similar statements for subsequent periods this item will not be so large.

(B) $10,500,000 of the new ten-year 6% debenture notes having been issued on Dec. 27, 1922, the foregoing statement takes up interest on that issue for only four days. Attention is directed to the fact that after deducting all other interest charges there was available for interest on these notes $495,215 in Dec. and $1,197,419 for the quarter. The interest on this entire issue for corresponding periods would be $52,500 and $157,500 respectively.

In commenting on the figures, Colonel Grayson M.-P. Murphy, chairman of the executive committee of the company, declared that while all requirements under the plan were not earned during the last half of 1922, when the plan was operative for the first time, there is every indication that they will be before the end of the fiscal year on July 1, 1923. This belief is based on the fact that if earnings are as good the next two quarters as they were in the last, requirements will be covered by a satisfactory margin.

The Interborough continues to carry out its policy of introducing a number of economies, President Frank Hedley stating that the savings from use of the feather-weight gates have paid for their installation three or four times over during the year.

Col. Murphy also stated that December earnings were large enough to allow a sum of $48,839 to be credited against the city's investment in the rapid transit lines. However, no payments can be made to the municipality until accrued preferentials amounting to

Directors Elected

On Jan. 8 a stockholders' meeting of the Olean, Bradford & Salamanca Railway was held in Olean, N. Y., vice-president James P. Quigley presiding, for the election of a board of directors and the transaction of the general business of the company.

The following directors were elected: C. N. Mason, L. W. Osborne, W. O. Hay, Jr., James P. Quigley, W. A. Dusenbury, W. G. Baker, Jr., H. M. Watts, T. Duncan Whelan and E. B. Vreeland.

At a meeting of the board of directors held on Jan. 25 in New York City C. N. Mason was re-elected president of the company, James P. Quigley was re-elected vice-president and C. A. Graves was elected vice-president in charge of operation and to succeed R. H. Wheeler as general manager of the company after April 1.

Toronto Must Pay $11,188,500

The arbitration board which has been considering the amount due Sir William Mackenzie and his associates from the city of Toronto for its seizure of the Toronto Railway in 1921, decided on Jan. 31 on the sum of $11,188,500. The city authorities previously stated they would appeal if the award was greater than $7,000,000.

Auction Sales in New York.—At the public auction rooms in New York, there were no sales of electric railway securities this week.

Net Income of $1,418,020.—The Market Street Railway, San Francisco, Calif., for the twelve months ended Dec. 31, 1922, reports a railway operating revenue of $9,583,437 and operating expenses of $6,860,038. The net income was $1,418,020.

Claims Being Filed.—Creditors of the Northampton, Eastern & Washington Traction Company, Phillipsburg, N. J., other than bondholders, who may claim to have a lien superior in rank to the lien of the mortgage securing said bonds are now filing their claims with Counselor Linton Satterthwaite, 137 East State Street, Trenton. The United States District Court at Trenton has issued an order to the effect that the company's property shall be sold.

Bus to Replace Railway.—In view of the decision of the Supreme Court giving Receiver D. P. Abercrombie permission to suspend operation of the Concord, Maynard & Hudson Street Railway, the Board of Selectmen of Hudson on Jan. 16 decided to grant a bus line franchise of A. J. Lowell, Woburn, to begin operations at once. It is planned to maintain a bus service in the several towns and over the same route as the defunct railway has run since 1901. This is an 18-mile interurban.

Receivers to Request Sale Date.—Properties of the Memphis (Tenn.) Street Railway may be sold within the next thirty days. Receivers of the company will request Judge J. W. Ross to set a date of sale soon. The same interests that purchased the Memphis Gas & Electric Company are expected to buy the railway. City commissioners have been advised that the railway proposes to pay its back taxes amounting to about $200,000 on sale of the companies' properties.

Service Abandoned.—Service on the New Carlisle-Carlisle Junction branch of the Indiana, Columbus & Eastern Traction Company, Cincinnati, Ohio, stopped at midnight on Jan. 27, under orders issued from headquarters in Springfield, Ohio, in accordance with decisions of the courts and State Public Utility Commission authorizing abandonment of the branch. The line is 4.22 miles in length. The branch was built in 1901 as part of the Springfield & Western Traction Company's line, and was acquired in 1906 by the Indiana, Columbus & Eastern Company, then a part of the former Ohio Electric system.

Traffic and Transportation

Mr. McAdoo Behind Bus Project

Railways in Los Angeles Oppose City Granting Franchise for Huge Bus System

William G. McAdoo, former Secretary of the Treasury, representing business interests in the East, presented an application to the City Council of Los Angeles on Jan. 23 for thirteen franchises for a bus system to serve 60 miles of streets in the city of Los Angeles. The backers of the new bus corporation, organized for $2,000,000, no stock to be offered for sale, is represented by E. F. Simms, vice-president of the Sinclair Gulf Oil Company and Joseph L. Rhinock, both of New York. The director and manager of the company is Richard W. Meade, formerly with the Fifth Avenue Coach Company, New York.

The buses, of the double-deck type, would operate in the congested district and run to all parts of the city, the fare to be 10 cents, with a universal transfer system. The proposed buses would cover practically all territory reached by the Pacific Electric Railway and the Los Angeles Railway, but the fares on the buses would be higher than those on the street railways.

The petition of the bus corporation has been referred by the City Council to the Board of Public Utilities, which body received immediate demands from certain factions to hold a public hearing toward taking action at once on the matter.

The public hearing of the Board of Public Utilities was held on Jan. 26. At it the local railways offered considerable opposition to the city granting the franchise. The Pacific Electric Railway officials threatened to discontinue all improvement work contemplated by it in Los Angeles, including the company's proposed $3,000,000 subway to serve Hollywood and San Fernando valley points, if the bus franchise is granted. Retirement of both the Pacific Electric and Los Angeles Railway companies from the Los Angeles city transportation field, if the city grants the extensive bus franchises, also was threatened by the Pacific Electric officials. Civic encouragement of bus systems, they declared, will be interpreted as an official decision that street railway transportation is obsolete.

Finally the application by Mr. McAdoo was referred to the committee as a whole by the Board of Public Utilities. This action was taken over objection of President Leeds of the board, who urged that the usual routine should be followed and the matter be referred to H. Z. Osborne, Jr., chief engineer of the board for a study and report on the matter, Mr. Leeds openly declaring that reference of the matter to the committee of the whole took the matter out of the hands of the board's chief engineer.

R. W. Meade, proposed manager of the new bus system, outlined the plans of his company before the board, declaring that fifteen routes over which the financial supporters of the bus system plan have asked franchises are tentative and subject to amendment. He stated that instead of taking away patronage from the street railways, the bus lines would work up business of their own. He declared the business on his bus lines would largely come from business men and downtown employees who now use private automobiles to reach their work. The initial investment of the huge bus system is given as $1,750,000.

D. W. Pontius, vice-president and general manager of the Pacific Electric Railway, contended that through the construction of the Hollywood subway, as proposed by the company, immediate relief will be forthcoming to the traffic congestion on both Hill and Sixth Streets. He further stated that the company intends to launch a huge construction and improvement program, which would include the erection of a viaduct and overhead system out of the company's Sixth and Main Streets terminal, costing $18,000,000, which it was declared would serve all outlying cities with rapid interurban service to the north, northeast, south and southwest of Los Angeles.

The railway officials argued that both railways would like to test the need for railway extensions through the installation of bus line service, and cited the fact that the Pacific Electric now has before the Board of Public Utilities of the city of Los Angeles various applications for bus franchises for lines to serve as feeders for the company's routes in the Hollywood district.

Mr. McAdoo, attorney for the new bus corporation, in addressing the Board of Public Utilities contended that the proposed franchise for bus transportation facilities is extremely desirable in the form in which the application has been submitted to the city and that bus lines operated as it is proposed to do under the new grant never hurt street railway patronage.

"El" Tells Patrons How to Spend Vacation

Railways are always performing services but seldom a service such as the Chicago Elevated did for its patrons just prior to Christmas. Believing that a lot of people don't know what to do with a vacation when they have it the company issued a four-page pamphlet suggesting trips at low costs which would be instructive as well as entertaining to wile away the hours during the exceptionally long winter holiday. If the vacationist desired to indulge in botanical wonders in Garfield Park or if he preferred to revel in the rug collection at the Art Institute or watch the birds and elephants in the Field Museum of National History the Chicago Elevated promised to transport all to their "Seventh Heaven" speedily, safely and cheaply. The pamphlet was of intrinsic value for preservation because of the map it contained and because of the possibility of its use as a future guide to the wonders of the city of Chicago.

Bill Proposed to Permit City Bus Operation

The Legislature of the State of Washington has been asked to consider a bill introduced by Senator Dan Landon of the appropriations committee, and a resident of Seattle, which will permit the city of Seattle and other cities of the first class owning municipal railways to own and operate buses in conjunction with the railway systems within the corporate limits of the city. The bill expressly removes any jurisdiction which the State Department of Public Works might have over such buses, and leaves their supervision entirely within the hands of the cities.

The bill is said to be for the purpose of permitting Seattle to operate buses in outlying districts, instead of extending the lines of the municipal railway. At the same time, it is also said to give the city the right to parallel and operate buses along the line of the Rainier Valley railway system, which did not fall into the hands of the city when the Seattle electric railway properties were taken over.

Five-Cent Fare Experiments to Be Terminated

Bringing to a close a test period of fourteen months on one line, and nine months on all lines in Norwalk, the Public Utilities Commission of Connecticut issued an order terminating on Feb. 4 the experiment which has been conducted to determine the adequacy of a 5-cent trolley fare.

On that date, the West Avenue line of Norwalk will permanently become a 5-cent line, and all others of the Norwalk division which have operated on a 5-cent fare basis since May 21, 1922, will be raised to the general state rate, which provides for a base fare of 10 cents or three rides for a quarter by the purchase of tokens.

Norwalk is the first city in the state to secure favorable action by the Public Utilities Commission to test the 5-cent fare. On Nov. 6, 1921, the commission put into effect on one line in Norwalk the pre-war rate of a nickel and the resulting increase of business was considered sufficient to warrant a further test of this rate.

A further order extended the 5-cent fare to all lines in May, 1922. The results of this test, however, show that riding did not double along lines in sparsely settled sections, and at the low rate of fare the company showed a deficit. Norwalk returns to the three rides for a quarter with the exception of one line, for a short period only, the

Public Utilities Commission having recently announced that a fare rate of two rides for 15 cents would become effective throughout the state on April 1, and the lines of every division, except those radiating from Main Street and Fairfield Avenue, Bridgeport, and the West Avenue line, so called, in Norwalk. The recent two rides for 15 cents decision of the commission was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Jan. 27.

Massachusetts Companies Petition to Operate Buses

Massachusetts is now taking up in earnest the question whether the electric railways shall own and operate buses as feeders to the street cars. Under current discussion is the move of the Eastern Massachusetts Street Railway to establish such a feeder line system. This company has a petition before the Massachusetts Department of Public Utilities asking for authority to acquire, own and operate jitney lines. Having secured the approval of the Utilities Department, which is almost a foregone conclusion in view of the attitude of this department toward the general proposition, the Eastern Massachusetts company will go before the authorities in the cities of Malden and Revere and ask for licenses to operate an auto bus service.

The company proposes to operate buses in Linden and in Malden proper to pick up passengers in territory formerly served by the electric railway. In Revere the company proposes to operate in Park Avenue. But both of these cities have demonstrated hostility toward the proposition and are likely to decline to issue any licenses to the company. For the present the Eastern Massachusetts has no plans under consideration for introducing the bus in any other city or town, but after the Malden and Revere question is settled it is expected to survey the field for bus service elsewhere.

The Springfield Street Railway has already secured approval from the Public Utilities Department to acquire, own and operate such feeder lines and is planning to go to the local authorities in its district for the requisite licenses. In fact, the company has already started bus service under plans reviewed in these columns.

The Boston Elevated Railway was granted this authority some time ago, and the Northern Massachusetts Street Railway has a bus petition pending before the Department of Public Utilities.

Additional Buses in Use.—The Puget Sound International Railway & Power Company, Everett, Wash., has recently received two additional buses, to be used in the company's motorized transportation system. Six buses are now operating, or about one-half of the contemplated change. Manager George Newall reports that the company and its patrons are well satisfied with the new mode of transportation.

Opposed to Lower Fare

Committee Discusses With City Officials Handling Railway Warrants—Comptroller Prepares Statement

A committee appointed by the Seattle Clearing House Association, and composed of three prominent bankers in the city, recently met with city officials to discuss the handling of the Seattle (Wash.) Municipal Railway warrants. The line went on the warrant basis on Jan. 25, warrants being issued for the half month salaries of employees and for supplies, amounting to virtually $224,000, the warrants to be redeemed at the rate of $18,000 a day. The line was put on a warrant basis for the purpose of meeting the interest payment on the street railway bonds on March 1.

At the joint meeting, the Clearing House Committee advised strongly against the present proposed plan of returning to a 5-cent car fare on March 1, pointing out that the present 8¾-cent car fare must be retained in order to continue the present status of the street car system. J. A. Swalwell, chairman of the committee, stated that recommendations to this effect will be presented to Mayor E. J. Brown, who favors the 5-cent fare. The committee states that it would require a 46 per cent increase in patronage to justify a 5-cent fare, and that in its opinion, such an increase cannot be expected.

A statement prepared for the committee by City Comptroller H. W. Carroll showed that even with 1,000,000 more patrons monthly, following reduction to a 5-cent fare, the city car lines will face a local indebtedness covered by outstanding 6 per cent warrants totaling $1,138,400 by next Christmas.

The statement of Comptroller Carroll shows possibilities of a constant increase of indebtedness month by month. It not only allows for added patronage under a 5-cent car fare, but the 1¼ cents to be charged for transfers. After setting aside $1,223,975 for interest and redemption on Feb. 1, for the March 1 payment, on the railway debt, the city will have but $36,926 with which to operate the ten days between Jan. 20 and Feb. 1. On Feb. 1, the comptroller estimates the railway will have $167,000 warrants outstanding and on March 10, only $98,400. The system will be placed on a 5-cent fare basis March 1, so on April 10, the net warrant obligation will mount to $187,400. Then the warrant obligation steadily increases to more than $1,000,000 by the end of the year. With estimated daily collections reduced from $17,700 to $14,000 on March 1, added patronage and transfer charges have been generously considered, the City Comptroller states.

Superintendent of Utilities George F. Russell, in his report to the City Council on Nov. 1, 1922, estimated a deficit of $1,000,000 at the end of the year, but allowed for no increase in traffic in his report. He now states that there is no reason to doubt that the city lines will handle 12,000,000 passengers monthly on the 5-cent basis, which is the number handled in December, 1919, at 5 cents. His estimated increase in traffic is 4,000,000 monthly against the Comptroller's 1,000,000. He also states that the management of the lines expects to effect a saving of nearly $400,000 this year in operating costs.

Half-Fare Rates for School Children Proposed

A bill amending the public utilities act of the State of California to make mandatory the granting of half-fare rates to school children by street railways was introduced in the State Assembly, on Jan. 24 by Assemblywoman Saylor of Berkeley. It is claimed that under the present laws it is optional with the street railway lines in the state; while some of them do grant half-fares to school children, others refuse to do so. In the proposed bill it is the intent to place the matter under the power of the State Railroad Commission. Half-fares are now allowed school children in San Francisco, Los Angeles, San Diego, Fresno and numerous other cities in the state, but they are not allowed in Oakland and Berkeley.

Will Not Bid on Bus Franchise —Proposes Six-Cent Fare

No bids will be submitted by the Pacific Electric Railway to the city of Santa Monica, Calif., on the bus transportation franchise advertised for sale by the city. Feb. 9 is the final date for receiving the bids. The railway has informed the city of Santa Monica that it will submit to the city its proposals for a comprehensive local service with a 6-cent fare. The terms of the city's proposed blanket bus franchise calls for a 5-cent fare. The present bus lines in the city of Santa Monica operate in competition with the local service of the railway. The company stated that for business reasons it would not bid on the bus franchise on a 5-cent fare basis.

Seven-Cent Fare in Effect.—The Danville Traction & Power Company, Danville, Va., put into effect on Jan. 1 the 7-cent fare recently approved by the City Council. The ticket rate is five for 30 cents.

Sells Tickets on Corners.—The Nashville Railway & Light Company, Nashville, Tenn., has started the practice of selling tickets for cars on the uptown corners. It is the belief that this will speed up service, while the passengers get on and off the cars.

To Make Traffic Survey.—To settle the problem of traffic congestion in the downtown business district of the city, the Los Angeles (Calif.) Railway will have a traffic survey made. Electric railway transportation has been handicapped by the congestion.

Higher Fares Wanted.—It is said that if the City Commission of Waco, Tex., does not give the Texas Electric Railway permission to increase its fares from 5 cents to 7 cents the company will operate only one-man cars on an eighteen-minute schedule.

Personal Items

New Commissioner

J. T. Whittlesey, Engineer Well Known in East, Appointed to California Railroad Body

James T. Whittlesey, prominent consulting engineer of San Francisco, has been appointed to a two-year term as commissioner on the California State Railroad Commission. After his graduation from Yale Mr. Whittlesey was with the Thomson-Houston Electric Company from 1889 to 1890. He then went to New York as consulting engineer, and in 1892 he entered electric railway service in Brooklyn. During the succeeding two years he was chief

J. T. Whittlesey

engineer of the Brooklyn Rapid Transit Company. In 1898 he became superintendent of the Stephenson Car Company of New Jersey. For three years following 1900 he was chief engineer of the United Electric Company of New Jersey, and following this held the same position with the Public Service Corporation of New Jersey. In 1912 Mr. Whittlesey removed to California and was retained by the Spreckels interests of San Francisco to advise them on utility matters. During the past five years he has been director of the Pacific Coast branch of the Engineering Business Exchange, with offices in San Francisco. He is a member of the A.I.E.E., A.S.M.E. and American Electrochemical Society.

Mr. Webster May Manage New Road

F. W. Webster, general manager of the Fresno (Cal.) Traction Company, will probably accept the managership of the Minarets & Western Railway, but will not withdraw from electric railway work. The new road, for such is the Minarets & Western, will operate between Fresno and High Sierra, handling minerals, lumber and passengers. It is a wonderful territory through which the road will run, and apparently has very bright prospects. In addition to being general manager of the Fresno Traction Company Mr. Webster is also manager of the Visalia Electric Railway, Stockton Traction Company and Central California Traction Company.

J. L. Longino Manager

As Vice-President and General Manager of Alapco He Will Relieve President Couch of Details

J. L. Longino has been made vice-president and general manager of the Arkansas Light & Power Company, which is serving forty-five cities and towns in Arkansas from eight central power stations in that State. The position of general manager was created in order to relieve H. C. Couch, president of the company, of many of the details of management which he has been handling and with the view of promoting even greater efficiency in the operation of the properties.

Mr. Longino was formerly operating superintendent of the Arkansas Light & Power Company and has served as its secretary and treasurer since organization. He was made manager about two years ago of the Pine Bluff Company, an associated public utility company, which operates the electric railway, power and water services in Pine Bluff. Mr. Longino will continue to manage the Pine Bluff Company, but will be relieved of some details by L. B. West, auditor of the company. The secretaryship of the Arkansas Light & Power Company has been taken over by L. Garrett. No other changes in the official personnel of either company are contemplated, according to a bulletin issued by President Couch. In addition to its eight steam plants using for fuel oil, gas and pulverized coal from the Arkansas fields, the Arkansas Light & Power Company is now completing a small hydro-electric power station on the Illinois River near Russellville, Ark. It will distribute the electrical energy to be generated by the Caddo River Power & Irrigation Company, which is to erect three dams and power stations on the Ouachita River near Hot Springs National Park, Ark. Anticipating early completion of the Caddo River Power & Irrigation Company's initial power station the Arkansas Light & Power Company has recently completed a 66,000-volt line from its present system of transmission lines to Malvern and Arkadelphia within a few miles of the site selected by the first power plant of the Caddo River Power & Irrigation Company.

Charles L. Henry, president of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., was re-elected president of the Indiana Public Utility Association at the meeting of the association held in Indianapolis on Jan. 25.

Mr. Casey at Atlanta

General Superintendent of Transportation at Buffalo Resigns to Join Georgia Company

William M. Casey has resigned as general superintendent of transportation of the International Railway, Buffalo, N. Y., to become superintendent of transportation of the Georgia Railway & Power Company, Atlanta, Ga. Mr. Casey's position has not yet been filled. Mr. Casey came to the International Railway three years ago from Washington, D. C., where he held the position of superintendent of transportation of the Washington Railway & Electric Company.

Mr. Casey was born in Ireland in 1870. He came to the United States at an early age. For many years he lived in Lawrence, Mass., where he received his early schooling. He went West in

W. M. Casey

1888 and enlisted in the United States Army. He served with distinction in many insurrections of the Indian tribes and in 1891 he received an honorable discharge. A year later he entered the employ of the Denver City Cable Company, as gripman. He was promoted to carhouse foreman in 1893 and served in that capacity until 1902, when he was promoted to division superintendent of the Denver Tramway. Seven years later he was made trainmaster in charge of traffic and discipline and later superintendent of transportation..

Mr. Casey left the Denver system in 1916 to joint the staff of John A. Beeler, traffic expert, then engaged on a survey of the traction lines at Washington, D. C. Five years ago he was appointed superintendent of transportation of the company and served in that capacity until he went to Buffalo. Mr. Casey succeeds S. E. Simmons with the Georgia Railway & Power Company.

P. R. T. Traffic Engineer Appointed to Buffalo

R. Harland Horton has been appointed assistant to the vice-president of the International Railway, Buffalo, N. Y., in charge of traffic over the local and suburban lines of the company, according to announcement made by

Herbert G. Tulley, president of the International. Mr. Horton comes to Buffalo from Philadelphia, where he had been associated with the Philadelphia (Pa.) Rapid Transit Company as traffic engineer for several years. Mr. Horton fills a new position created by President Tulley as assistant to Edgar J. Dickson, vice-president of the International.

Mr. Dell with Association

Office of Director of Exhibits Will Be Filled by Former Association Attache

Frederick C. J. Dell has been made director of exhibits of the American Electric Railway Association. Mr. Dell will enter upon his duties at once. It would not do to say that they are new duties to him, for they are not. He is thoroughly acquainted with them by previous experience. In fact, it was his able discharge of similar duties in the past that made Mr. Dell the one man above all others to whom the association knew it could intrust the responsibilities of the job. His appointment in fact illustrates again the correctness of the remark of Emerson about the world making a beaten path to the door of the man who does his job better than any one else. Metaphorically, that is just what the association did. It beat a path to the office of Benjamin A. Hegeman, the president of the National Railway Appliance Company, New York, in quest of Mr. Dell. Mr. Hegeman was, of course, reluctant to relinquish his claim upon Mr. Dell as secretary of that company, but Big Ben, as Mr. Hegeman is familiarly known, has again done a generous thing primarily in the interest of Mr. Dell, but a still bigger thing in the interest of the association.

Freddie Dell, as he is best known, has carved his own career from the very beginning. His business record entitled him to several *cum laude* degrees, but that record was made in the school of hard knocks and not in the classroom or laboratory. Mr. Dell took the business world by the tail, as it were, in the office of the Interborough Rapid Company in 1904. It wasn't much of a job that he had at the start, that of application clerk in the office of Frank Hedley, vice-president and general manager, but it was the opportunity and not the job that Mr. Dell was after. From Sept. 15, 1904, to March 1, 1911, Mr. Dell was with that company. An application clerk with keen powers of observation can learn a lot about human nature. Mr. Dell was such a clerk. In consequence he took with him a fund of such information gained in that position and the other posts which he filled with the Interborough, all carefully classified, when on March 1, 1911, he became assistant to the secretary and treasurer of the American Electric Railway Manufacturers' Association.

This position with the association he retained until May 15, 1916, when he was made assistant to the director of exhibits for the Atlantic City convention of the American Electric Railway Association. This was the first exhibit handled by the association itself after the manufacturer members had accepted the invitation extended by the parent organization to join its ranks.

Long before that, however, Mr. Dell had been an active participant in the work of directing the arrangements for the yearly conventions. In fact, he attended the Denver convention of 1909 as assistant to Secretary-Treasurer George Keegan of the Manufacturers' Association and the 1910 convention in a similar capacity. Meanwhile several of the manufacturer members of the association began to cast furtive glances in the direction of Freddie, but that was all the good it did them. On Jan. 17, 1917, however, Mr. Dell did succumb to the proffer made to him by Mr. Hegeman and entered his employ as secretary. Mind you, that was in January, 1917. One year and eleven months later Mr. Dell was made secretary of the company of which Mr. Hegeman is the head. To be exact this was on Dec. 24, 1918—

F. C. J. Dell

a Christmas present. Meanwhile Mr. Dell had been elected secretary of the American Electric Railway Manufacturers' Association. This was on Oct. 1, 1916, and he continued in that capacity until the association was disbanded on Jan. 8, 1920.

Mr. Dell's first work for the association now will be to enter actively into the work of the Committee of 100 in its campaign for additional funds. He will also be assigned to assist the membership committee in its continuous campaign for new members in the association. Mr. Dell has two hobbies. One of them is work. The other is his family. He is a member of the Lotos Club and is assistant to the secretary of the club. He is also a member of the New York Railroad Club.

Mr. Cadle in Engineering Practice

Charles L. Cadle, formerly chief engineer of the New York State Railways, plans to establish an office in Rochester as a consulting engineer, specializing in the problems of electric railway, light and power properties. Mr. Cadle retired on Jan. 17 as state superintendent of public works, in which post he was in charge of the Barge Canal. During his administration tonnage carried on the canal almost doubled, and the gain last year was approximately 48 per cent.

From 1904 to 1906 Mr. Cadle was with the Cleveland Railway. He next became manager of the Electric Railway Improvement Company, Cleveland, and in 1917 went to the New York State Railways as electrical engineer. Two years later he was appointed chief engineer of the New York & Harlem Railroad. Meanwhile, however, he continued his duties with the New York State Railways in Utica, Syracuse and Rochester.

Changes Announced in Tennessee Commission

Dorsey B. Thomas, Camden, has been elected secretary of the Tennessee Railroad & Public Utilities Commission. He succeeds J. H. Corbitt. Porter Dunlap, McKenzie, has been sworn in as a commissioner to succeed W. N. Beasley, Halls, Republican, who held office only a few months. Gen. Harvey Hannah, Oliver Springs, long a member of the commission, has been elected chairman.

Changes Announced in Byllesby Organization

In addition to the election of Francis C. Shenehon as vice-president and director of the Byllesby Engineering & Management Corporation, New York, N. Y., in charge of all engineering and construction, effective Jan. 1, 1923, the election of Halford Erickson as vice-president and director has been announced. He will be in charge of operation of all of the subsidiary utility properties which are included in the system of the Standard Gas & Electric Company.

Mr. Erickson for many years was a member of the Railroad Commission of Wisconsin, and for two years, 1915 and 1916, he was chairman of that commission. For the last five years he has been vice-president of the Louisville Gas & Electric Company.

The following have been elected vice-presidents of H. M. Byllesby & Company:

R. G. Hunt, who has been with the organization for nineteen years and for seventeen years has been assistant to the vice-president in charge of operation of Byllesby Engineering & Management Corporation.

Joseph H. Briggs, who has been connected with the organization for fourteen years, and for the last four years has been manager of the bond department.

B. W. Lynch, who has been connected with the organization for eighteen years and has been auditor of the Byllesby Engineering & Management Corporation.

M. A. Morrison, who has been connected with the organization for fourteen years as assistant secretary and assistant treasurer.

F. W. Brown Superintendent Western and Northwestern Michigan Lines

New appointments on the Michigan Railway have become effective because of the resignation of H. P. Harrsen, assistant general manager, who, as noted previously in the ELECTRIC RAILWAY JOURNAL, becomes identified with the Electric Bond & Share Company, New York.

F. W. Brown, formerly traffic manager, now is general superintendent of the western and northwestern divisions.

J. H. Weldon, formerly chief of the tariff bureau, is traffic manager.

O. J. Hansen, formerly chief clerk, is superintendent of western division.

J. C. Taylor, formerly trainmaster, is superintendent of the Northwestern division.

C. P. Gerth, formerly local freight agent, is chief of the tariff bureau.

S. E. Simmons Leaves Atlanta Company

Important changes are announced in the personnel of the railway department of the Georgia Railway & Power Company, Atlanta, Ga.

S. E. Simmons, for a long time superintendent of transportation, has relinquished that position to go to Florida for the benefit of his health. W. H. Flury was acting superintendent, but William M. Casey has been appointed to succeed Mr. Simmons.

W. H. Matthews, also with the company for many years, has resigned from the position of assistant superintendent to enter business for himself. His successor has not yet been selected.

W. F. Edwards has been made an assistant superintendent of transportation of the company succeeding Edward Gramling.

John G. Huntoon, vice-president of the Tri-City Railway, Davenport, Iowa, has announced his candidacy for the Mayoralty of Rock Island, Ill., in the spring elections.

C. A. Graves has been elected vice-president in charge of operation of the Olean, Bradford & Salamanca Railway, Olean, N. Y. He will also succeed R. H. Wheeler as general manager, effective April 1.

Thomas E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, was sworn in on Jan. 1 as a member of the Philadelphia Board of Education. He succeeds in this capacity the late John Wanamaker.

R. R. Ray, formerly with the Philadelphia (Pa.) Rapid Transit Company, has been appointed secretary of the new Co-operative Association, organized among the employees of the International Railway, Buffalo, N. Y.

Cornell S. Hawley, president of the Consolidated Car Heating Company, has been appointed a deputy administrator by Gen. George W. Goethals, state fuel administrator of New York. Mr. Hawley succeeds Guy D. Hills, resigned.

Gen. Lincoln C. Andrews, recently appointed receiver for the New York & Queens County Railway, Long Island City, N. Y., has also accepted appointment as general manager of the Long Island Electric Railway and the New York & Long Island Traction Company.

C. W. Eby, assistant chief engineer of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, read a paper "Taxation of Motor Buses and Trucks on State Highways" before the Iowa Engineering Society on Jan. 24. It is expected that this paper will be abstracted for publication in an early issue of *Bus Transportation.*

Matt Spitz has been appointed superintendent by the board of directors of the Gary & Southern Interurban line operating between Gary and Crown Point, Ind. C. J. Fifer, who had charge of the interurban line for several years, is returning to Akron, Ohio, to engage in business.

Col. Charles Keller was re-elected chairman of the Public Utilities Commission of the District of Columbia by the commissioners at a board meeting on Jan. 26. Commissioner Rudolph praised the work of Commissioner Keller as chairman of the commission since his appointment as engineer commissioner of the District.

I. W. Ross, formerly vice-president and chief engineer of the Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala., has now become president, general manager, chief engineer and purchasing agent. J. S. Billings, formerly treasurer, auditor, general freight and passenger agent, now assumes the title of secretary and treasurer, relinquishing the title of general freight and passenger agent.

Frank H. Gaskill, formerly a member of the secret service staff of the Philadelphia (Pa.) Rapid Transit Company, has been appointed superintendent of intelligence of the International Railway, Buffalo, N. Y. Mr. Gaskill has been in Buffalo since the outset of the strike of employees of the company July 1, 1922, and played an active part in the investigation which brought about the indictment by the federal grand jury of thirteen striking employees and State Senator Robert C. Lacey on charges in connection with the dynamiting of the Buffalo-Niagara Falls high-speed line car last fall.

H. E. Chubbuck, vice-president executive of the Illinois Traction System, Peoria, Ill., was elected a director of the Merchants' and Illinois National Bank of that city at the Jan. 9 meeting of the stockholders of that institution. Mr. Chubbuck has long been a stockholder in the bank and his election to the directory is highly pleasing to his Peoria friends. Mr. Chubbuck has been seriously ill, but his condition is now reported to be much improved. Some of the down state newspapers recently ran rather startling news as to the nature of his illness, but this was found to be untrue. He is now expected back to the office in due time.

Obituary

Henry M. Whitney

Henry M. Whitney died at his home in Brookline, Mass., on Jan. 25 at the age of eighty-four. Until his retirement from active business affairs several years ago Mr. Whitney was an international figure as financier and transportation magnate. He had a good deal to do with laying the foundation for the system now known as the Boston Elevated Railway. In fact, in 1887, largely through his instrumentality, eight horse railways at Boston were consolidated into the West End Street Railway with Mr. Whitney as president. No sooner had the roads been brought together than Mr. Whitney began to cast about for a better method of propulsion of the cars. His plans for installing the cable were already far advanced when his attention was invited to the possible use of the electric motor.

A visit to Allegheny City, Richmond and Washington convinced Mr. Whitney that the new system was what he desired. A contract was made by him for the equipment of the line to Allston, partly with conduit and partly with the overhead trolley. The conduit portion was a failure and the portion equipped with the trolley was extended later downtown. This was the beginning of full electrification in Boston. The step of installing electricity at that time was a bold one but the success of the Boston lines was recognized and had a great deal to do with the extension of the electrical system.

It is interesting to note that while Henry M. Whitney was thus the leading figure in the transit development of Boston, his brother, William C. Whitney, was undertaking similar work in New York through the Metropolitan Street Railway, with the co-operation of Messrs. Widener and Elkins of Philadelphia. Henry M. Whitney continued for many years to be a factor in the transit situation in Boston, but gradually turned his attention to his many other interests, including steamship lines and mining. He was one of the organizers of the Dominion Coal Company, out of which grew the present coal and iron industry at Cape Breton, N. S. It was said of him that "no American ever did more for Canada."

William H. Simms, for eight years librarian of the Department of City Transit of Philadelphia and formerly general manager of the Philadelphia & Western Railway, is dead. He was a native of England.

E. T. Nye, general manager of the West Jersey Electric Company and the Five-Mile Beach Electric Railway, died on Jan. 30 at his home in Wildwood. He had been with the above mentioned companies for the past sixteen years, and prior to his going to Wildwood, had charge of the electric light company in Pleasantville, N. J.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Deliveries Lengthening in Car and Car Equipment Purchases

It has been some time since this department of the JOURNAL carried the news that the electric railways would do well to be forehanded in looking after their needs for new cars and car equipment. But that situation has again come to pass, for most of the car builders' and motor manufacturers' plants are now scheduled to capacity for some time to come. Railways that hold off in placing orders until they actually are badly in need of the new equipment are likely to have to wait several months for delivery, according to present indications.

Deliveries are rapidly lengthening and orders placed now with some of the car builders are not likely to be filled before well toward the end of the year. Furthermore, the prices of cars and motors and other car equipment are in prospect of increasing, on account of the demand and on account of the recent increases in steel costs, averaging about 5 per cent, which presumably will be reflected in the manufacturers' prices when present steel stocks have been exhausted.

One car builder recently refused an order for 100 cars, duplicates of those ordered by the same company recently, on the basis of the same price and delivery within 1923. This gives a definite indication of the condition of the market. From general knowledge of the situation, it seems timely to warn the railways that they will do well to plan considerably ahead on their new rolling stock requirements.

$240,000,000 Is Conservative Estimate

As detailed in the Jan. 6 issue of ELECTRIC RAILWAY JOURNAL, the editors estimated that the electric railway industry would expend $240,000,000 in new plant and equipment during 1923, as compared to the actual expenditure of $151,000,000 in 1922. In the few weeks since that time, the editors have had opportunity to discuss this estimate with numerous railway officials and have found that without exception they have felt that the estimate was very conservative. Recently one of the editors discussed the matter with the members of the committee on purchases and stores of the American Electric Railway Engineering Association during luncheon. There were present at this meeting a number of purchasing agents and engineers from various parts of the country. Not only did none of these men think that the estimate of expenditures was high, but nearly every one felt that, in view of the large expenditures his own company was planning, the total for the industry must be much larger than $240,000,000. Men from Indianapolis, Washington, Baltimore, Pittsburgh, Richmond and elsewhere spoke of expected large expenditures. The whole tone of the purchasing agents' meeting seemed highly optimistic and to foretell a very busy year for them. Recent visits of the editors to various properties have also brought out information of expected large expenditures in all departments.

Arthur W. Berresford Resigns

Arthur W. Berresford, vice-president of the Cutler-Hammer Manufacturing Company, has resigned after serving the company for twenty-two years. Mr. Berresford will in the future devote his time to work for the various associations of which he is a member. These include the American Institute of Electrical Engineers, American Association of Manufacturers of Electrical Supplies and others.

While "working for experience" he was connected with the Brooklyn railway system in carhouse work and line building. Later he became identified with the Riker Electric Company and the Ward Leonard Electric Company. In 1898 with two others Mr. Berresford purchased the assets of the Iron Clad Rheostat Company from the receiver and formed the Iron Clad Resistance Company, of which he became vice-president and manager. In 1900 this company was purchased by the Cutler-Hammer Manufacturing Company and he then entered the engineering department of the latter concern. In 1901 he was made superintendent; in 1902 secretary; in 1905 general manager and in 1907 vice-president and general manager.

Turbine Installation in New Haven

The Connecticut Company has ordered from the Westinghouse Company a 12,500-kva. turbine, to be installed in the railway company's power station on Grand Avenue, New Haven, known as Station A. The generator will generate 25 cycles three-phase, and the distribution will be at 11,000 volts. There will also be a 33,000-volt transmission line to Meriden, to which point power will be transmitted from New Haven.

To accommodate this turbine, the company is building a 36-ft. extension on the power station structure. It is expected that the turbine will be delivered in September. As an auxiliary the company will add a twin jet condenser with motor and turbine drive on each side.

Notable Achievements Win Recognition

Benjamin G. Lamme, chief engineer of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., was presented the Joseph Sullivant medal by the Ohio State University.

Mr. Lamme, who was graduated from Ohio State in 1888, is the first person to receive the Joseph Sullivant medal, which will, in the future, be awarded

ELECTRIC RAILWAY MATERIAL PRICES—JAN. 30, 1923

Metals—New York

Copper, electrolytic, cents per lb.	15.00
Lead, cents per lb.	8.07
Nickel, cents per lb.	27.50
Zinc, cents per lb.	7.35
Tin, Straits, cents per lb.	40.25
Aluminum, 98 to 99 per cent, cents per lb.	22.50
Babbitt metal, warehouse, cents per lb.:	
Fair grade	42.00
Commercial	25.00

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads	$8.125
Somerset mine run, Boston	4.55
Pittsburgh mine run, Pittsburgh	3.375
Franklin, Ill., screenings, Chicago	2.675
Central, Ill., screenings, Chicago	1.625
Kansas Screenings, Kansas City	2.50

Track Materials—Pittsburgh

Standard Bessemer steel rails, gross ton	$43.00
Standard open hearth rails, gross ton	43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.90
Tie plates (flat type), cents per lb.	2.525
Angle bars, cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.175
Steel bars, cents per lb.	2.10
Ties, white oak, Chicago, 6i n. x 8 in. x 8½ ft.	1.50

Hardware—Pittsburgh

Wire nails, base per keg	2.75
Sheet iron, (28 gage), cents per lb.	3.35
Sheet iron, galvanized, (28 gage), cents per lb	4.35
Galvanized barbed wire, cents per lb.	3.35
Galvanized wire, ordinary, cents per lb.	2.45

Waste—New York

Waste, wool, cents per lb.	12.00
Waste, cotton, (100 lb. bale), cents per lb.:	
White	11.5
Colored	9.5

Paints, Putty and Glass—New York

Linseed oil, (5 bbl. lots), cents per gal.	93.00
White lead, (100 lb. keg), cents per lb.	13.125
Turpentine, (bbl. lots), per gal.	$1.505
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength, all sizes, A quality), discount*	85.0%
Putty, 5 lb. tins, cents per lb.	5.50

*These prices are f.o.b. works, boxing charges extra.

Wire—New York

Copper wire base, cents per lb.	17.125
Rubber-covered wire, No. 14, per 1,000 ft.	7.25
Weatherproof wire base, cents per lb.	17.00

Paving Materials

Paving stone, granite, 4 x 8 x 4, f.o.b. Chicago, dressed, per sq.yd.	$3.60
Common, per sq.yd.	3.15
Wood block paving 3½, 16 treatment, N. Y., per sq.yd.	2.63
Paving brick, 3½ x 8½ x 4, N. Y. per 1,000 in carload lots	50.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd.	1.75
Cement, Chicago consumers net prices, without bags	2.05
Gravel, ¾-in., cu.yd., N. Y.	2.00
Sand, cu.yd., N. Y.	1.00

Old Metals—New York

Heavy copper, cents per lb.	12.25
Light copper, cents per lb.	10.87
Heavy brass, cents per lb.	6.905
Zinc, old scrap, cents per lb.	4.625
Yellow brass, cents per lb (heavy)	7.00
Lead, heavy, cents per lb.	6.75
Steel car axles, Chicago, net ton	20.75
Old car wheels, Chicago, gross ton	27.25
Rails (short), Chicago, gross ton	23.25
Rails (relaying), Chicago, gross ton	33.50
Machine turnings, Chicago, net ton	12 75

once in every five years for "an admitedly notable achievement on the part of a son or daughter of the Ohio State University."

Mr. Lamme has been a prolific inventor. Most of the early rotary converter patents were in his name and he alone is the father of the 60-cycle converter. The single-phase railway motor, which was once said to be impossible, also stands to the credit of Mr. Lamme's genius. To turbo-generator design and all Westinghouse alternating-current apparatus, which are numbered among the greatest accomplishments in the electrical world, Mr. Lamme has contributed much.

Rolling Stock

Department of Street Railways, City of Detroit, Mich., it is understood, is considering the purchase of 100 new cars.

Muskegon Traction & Lighting Company, Muskegon, Mich., is planning to purchase five cars to be put into service during the next six months.

Pennsylvania-Ohio Electric Company, Youngstown, Ohio, is considering the purchase of ten or twelve cars, for use on one of its interurban lines, which will be as elaborately equipped and finished as a limousine.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., has placed an order with the General American Car Company, Chicago, for fifteen gondolas, and with the Standard Steel Car Company, for twenty drop bottom cars.

Los Angeles (Calif.) Railway is planning to build its own cars. Eighty-two cars will be built this year in the new brick carpentry mill being erected at the South Park shops. Two motors of the latest type will be used on each car with equipment for multiple control so that two-car train service can be given. The cars will be 48 ft. long and will seat fifty-two passengers.

Springfield (Mass.) Street Railway suffered the loss of a carhouse and thirty-five open cars in a fire on Jan. 25. The estimated loss is $300,000. All the cars that were burned were of double truck type. General Manager H. M. Flanders says that the company will not buy open cars to replace those destroyed. Whether an order would be placed for new closed cars he was not prepared to say.

Track and Roadway

Los Angeles (Calif.) Railway will soon start the reconstruction of East Ninth Street between Mateo Street and Santa Fé Avenue line. This improvement involves 700 ft. of work in which new girder rail will be installed.

Toronto, Canada—Improvements will be made to the three divisions of the Toronto & York Radials purchased by the city and operated by the Hydro Commission. The City Council recently approved of an issue of $600,000 City of Toronto bonds for this purpose.

Knoxville (Tenn.) Power & Light Company will lay a block of track on Walnut Street between Union and Clinch Avenues, and the special work at the intersection of this track with the Union and Clinch Avenue lines will probably be started in March. This improvement is designed to alleviate traffic congestion.

Power Houses, Shops and Buildings

Northwestern Elevated Railroad, Chicago, Ill., recently installed in its Wilson Avenue shop, a new 400-ton wheel press manufactured by the Niles-Bement-Pond Company.

United Railways & Electric Company, Baltimore, Md., will probably place an order before long for three or four automatic substations, including two 25-cycle, 1,500-kw. units in each station.

Public Service Corporation of New Jersey, Newark, N. J., through a subsidiary company has purchased a new building in Newark to provide for the company's needs due to its growth.

Moncton Tramways, Light & Power Company, Moncton, N. B., has negotiated a contract with the city of Moncton under the terms of which it will distribute the hydro-electric current in Moncton and suburbs.

Georgia Railway & Power Company, Atlanta, Ga., is constructing a new storage yard and carhouse near its present substation in East Point. According to the plans there will be thirteen tracks providing storage and repair room for sixty cars. The structure when completed will represent an expenditure of approximately $40,000.

Trade Notes

Railway Switch & Crossing Company, Rutherford, N. J., has been incorporated at Trenton, N. J., with $100,000 capital to deal in railway supplies. Guy L. Fake of Rutherford filed the papers.

United Traction Company, Albany, N. Y., has just placed an order with the Economy Electric Devices Company for 273 watt-hour meters equipped with car inspection dials. This will make a complete equipment for the city lines in Albany.

Omaha & Council Bluffs Street Railway, Omaha, Neb., has placed an order for 101 more Economy watt-hour meters for equipping another division. One division was equipped with eighty meters some time ago and this second order has been based upon the performance on the first division.

R. W. O. Taylor has been engaged as sales engineer by Nic Le Grand, Inc. Mr. Taylor has been connected with the rolling stock department of the Michigan Railway, where he has gained experience that should qualify him to present to the railways the merits of the safety devices and car parts manufactured and sold by the Le Grand Company.

Frank Nickerson, for nine years connected with the San Francisco office of the Midvale-Cambria Steel Company, has severed his connections with that company to accept the position as southern California manager for the Bethlehem Steel Corporation. Recently he opened an office in the Washington Building, Los Angeles, Calif., for the Bethlehem Steel Corporation, covering all of southern California and the entire state of Arizona.

The Mine and Smelter Supply Company, with branches in Denver, Salt Lake City and El Paso, has taken over exclusive representation of the Wilson Welder & Metals Company for the states of Colorado, Utah, Nevada, Wyoming, New Mexico and Western Texas for Wilson plastic-arc welders and Wilson color-tipt welding metals. The Wilson machine and metals became internationally known during the World War, when it was used extensively in repairing the damage done to a large number of the interned German vessels. The mine & Smelter Supply Company will carry in stock at each of its branches a supply of all grades of Wilson color-tipt metals and plastic-arc machines for distribution throughout its territory.

Horace L. Howell, until recently connected with the National Railway Appliance Company, New York City, as manager of research and information in behalf of the London Underground Group and the London General Omnibus Company, is now associated with the Johnson Fare Box Company, Chicago, as sales manager and engineer. Mr. Howell has been engaged in transportation matters and electric power developments in the United States and Canada for a number of years. He has been connected with the Chicago City Railway, the Toronto Power & Railway Company, the Chicago Board of Supervising Engineers, and Weston & Company, Philadelphia. More recently he presented testimony in connection with the rate case of the Public Service Railway of New Jersey before the New Jersey Public Utilities Commission. Mr. Howell recently returned from England, where he was engaged in connection with the installation of fare collection devices in London. Mr. Howell was educated in England.

New Advertising Literature

Haskelite Manufacturing Company, Chicago, Ill., has issued a blueprinted booklet with diagrams entitled "Haskelite and Plymetl for Street Cars."

The Texas Company, 17 Battery Place, New York, N. Y., producers of Texaco petroleum products, has just issued a sixteen page booklet entitled "How Many Dollars Did You Spend This Year to Keep Your Cars Running?" This booklet treats of the costs and problems of street railway lubrication and gives figures and conclusions regarding their solution.